COLOR LASER COPIER 1000/1000S/3100 SERVICE MANUAL

REVSION 2

Canon

MAY 2001

FY8-13E3-020

CANON CLC1000/1000S/3100 REV.2 MAY 2001 PRINTED IN JAPAN (IMPRIME AU JAPON)

IMPORTANT

THE INFORMATION CONTAINED HEREIN IS PUBLISHED BY CANON, INC., JAPAN, AND IS FOR REFERENCE USE ONLY. SPECIFICATIONS AND OTHER INFORMATION CONTAINED HEREIN MAY VARY SLIGHTLY FROM ACTUAL MACHINE VALUES OR THOSE FOUND IN ADVERTISING AND OTHER PRINTED MATTER.

ANY QUESTIONS REGARDING INFORMATION CONTAINED HEREIN SHOULD BE DIRECTED TO THE COPIER SERVICE DEPARTMENT OF THE SALES COMPANY.

Printed in Japan

Imprimé au Japon

Use of this manual should be strictly supervised to avoid disclosure of confidential information.

Prepared by

OFFICE IMAGING PRODUCTS QUALITY ADVANCEMENT DEPT.5
OFFICE IMAGING PRODUCTS QUALITY ASSURANCE CENTER

CANON INC.

5-1, Hakusan 7-chome, Toride-shi Ibaraki 302-8501 Japan

INTRODUCTION

This Service Manual provides basic facts and figures needed to service the plain-paper Color Laser Copier 1000/1000S/3100 in the field. The Color Laser Copier 1000/1000S/3100 may be configured with the following system devices:

1. Preview Monitor/Preview Monitor Board
2. RDF-E1
3. Editor F1
4. Film Projector B1
5. Stapler Sorter F1
6. Buffer Pass Unit 1
7. Tandem Kit/Tandem Board
8. Control Card V
9. Interface Board B1/B2
10. PS-IPU III
11. IPU II
12. Film Scanner III
13. Copy Data Controller A1 (not available in some areas)
14. Paper Deck (option in Japan)
15. ED Board A1

Of the above, the Editor is covered in this manual.

This Service Manual is organized as follows:

CHAPTER 1, "General Introduction," shows the CLC1000/1000S/3100's features, specifications, and step-by-step instructions on how to operate the copier.

CHAPTER 2, "Copying Processes," shows how the CLC1000/1000S/3100 generates copies while discussing each of the steps involved.

CHAPTER 3, "Operations and Timing," explains the CLC1000/1000S/3100's mechanical system by function and principles behind its electrical systems in relation to timing of each operation.

CHAPTER 4, "Mechanical System," explains how to disassemble/assemble and adjust the CLC1000/1000S/3100.

CHAPTER 5, "Installation," provides points to note when selecting the site of installation and instructions on how to install the CLC1000/1000S/3100.

CHAPTER 6, "Maintenance and Inspection," provides tables of periodically replaced parts and consumables/durables as well as scheduled servicing chart.

CHAPTER 7, "Troubleshooting Image Faults/Malfunctions," provides maintenance/inspection, standards/adjustments, troubleshooting image faults, troubleshooting malfunctions.

APPENDIX contains a general timing chart, general circuit diagrams, and PCB diagrams.

This Service Manual is accompanied by the Service Handbook, which contains information on how to maintain and inspect the CLC1000/1000S/3100 through adjustment and troubleshooting work.

Information found in this manual may be updated from time to time for product improvement, and major updates are communicated in the form of Service Information bulletins.

All service persons are expected to be thoroughly familiar with the contents of this Service Manual, the Service Handbook, and Service Information bulletins and be ready to respond to the needs of the user promptly.

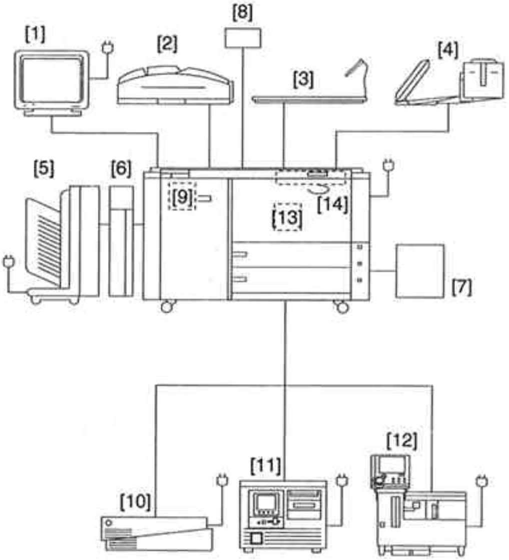
The following rules apply throughout this Service Manual:

1. Each chapter contains sections explaining the purpose of specific functions and the relationship between electrical and mechanical systems with reference to the timing of operation.
   In the diagrams, ▭▭▭ represents the path of mechanical drive; where a signal name accompanies the symbol ⟶ , the arrow indicates the direction of the electric signal.
   The expression “turn on the power” means flipping on the power switch, closing the front cover, and closing the delivery unit cover, which results in supplying the machine with power.
2. In the digital circuits, ‘1’ is used to indicate that the voltage level of a given signal is “High,” while ‘0’ is used to indicate “Low.” (The voltage value, however, differs from circuit to circuit.) In addition, the asterisk (*) as in “DRMD*” indicates that the DRMD signal goes on when ‘0’.
   In practically all cases, the internal mechanisms of a microprocessor cannot be checked in the field. Therefore, the operations of the microprocessors used in the machines are not discussed: they are explained in terms of from sensors to the input of the DC controller PCB and from the output of the DC controller PCB to the loads.

The descriptions in this Service Manual are subject to change without notice for product improvement or other purposes, and major changes will be communicated in the form of Service Information bulletins.

All service persons are expected to have a good understanding of the contents of this Service Manual and all relevant Service Information bulletins and be able to identify and isolate faults in the machine.

System Configuration



[1]	Preview Monitor
[2]	RDF-E1
[3]	Editor F1
[4]	Film Projector B1
[5]	Stapler Sorter F1
[6]	Buffer Pass Unit 1
[7]	Paper Deck (option in Japan)
[8]	Control Card V
[9]	Interface Board B1/B2, Preview Monitor Borad
[10]	PS-IPU III
[11]	IPU II
[12]	Film Scanner III
[13]	Copy Data Controller A1 (not available in some areas)
[14]	ED Board A1

CONTENTS

CHAPTER 1 GENERAL DESCRIPTION

I. FEATURES 1-1
II. SPECIFICATIONS 1-2
  A. Type 1-2
  B. Mechanisms 1-2
  C. Performance 1-3
  D. Others 1-5
III. LASER AND SAFETY MEASURES 1-9
  A. DHHS 1-9
  B. CDRH 1-9
  C. Points to Note When Handling the Laser Unit 1-10
IV. NAMES OF PARTS 1-11
  A. External View 1-11
  B. Cross Section 1-13
  C. Control Panel 1-15

CHAPTER 2 COPYING PROCESS

I. IMAGE FORMATION 2-1
  A. Outline 2-1
  B. Static Latent Image Formation Block 2-3
  C. Pre-Exposure (step 1) 2-3
  D. Primary Charging (step 2) 2-4
  E. Laser Exposure (step 3) 2-4
  F. Development (step 4) 2-5
  G. Retention/Transfer (step 5) 2-6
  H. Separation (step 6) 2-7
  I. Fixing (step 7) 2-7
  J. Photosensitive Drum Cleaning 2-8
II. AUXILIARY PROCESS 2-9
  A. Pre-Primary Charging 2-9
  B. Pre-Fixing Charging 2-9
  C. Grounding Roller 2-10
  D. Static Eliminator 2-10
  E. Transfer Belt Cleaning 2-11
III. LIMITATIONS 2-12
  A. Outline 2-12
  B. Characteristics 2-12

CHAPTER 3 OPERATION AND TIMING

I. BASIC MECHANISMS 3-1
  A. Functional Construction 3-1
  B. Outline of Electrical Circuitry 3-2
  C. Inputs to and Outputs from Major PCBs 3-3
  D. Sequence of Basic Operations 3-26
II. ORIGINAL EXPOSURE SYSTEM 3-29
  A. Outline 3-29
  B. Sequence of Basic Operations (original exposure system) 3-30
  C. Scanner Motor 3-32
  D. Changing the Reproduction Ratio 3-33
  E. Controlling the Intensity of the Scanning Lamp 3-34
III. IMAGE PROCESSING SYSTEM 3-36
  A. Outline 3-36
  B. CCD/CCD Driver 3-37
  C. Analog Image Processing 3-38
  D. Digital Image Processing 3-39
IV. LASER EXPOSURE SYSTEM 3-62
  A. Outline 3-62
  B. Sequence of Operations (laser exposure system) 3-64
  C. Laser Scanner Motor 3-65
  D. Generating the BD Signal 3-66
  E. Video Controller 3-67
  F. Laser Driver 3-72
  G. Image Position Correction 3-74
V. IMAGE FORMATION SYSTEM 3-84
  A. Outline 3-84

B. Basic Sequence of Operations (image formation system) 3-86
C. Stabilizing Images 3-87
D. Primary Charging Assembly 3-97
E. Developing Assembly 3-102
F. Cleaning the Photosensitive Drum 3-120
G. Controlling the Transfer Unit Charging Mechanism 3-122
VI. PICK-UP/FEEDING ASSEMBLY 3-127
A. Outline 3-127
B. Pick-Up Assembly 3-130
C. Paper Deck 3-145
D. Duplexing Unit 3-151
E. Transfer Unit 3-160
F. Pre-Fixing Feeding 3-177
G. Fixing/Delivery Assembly 3-178
H. Detecting Jams 3-189
VII. CONTROL PANEL 3-192
A. Outline 3-192
B. Operation 3-192
VIII. EDITOR 3-195
A. Outline 3-195
B. Operation 3-195
C. Zero-Level Adjustment for Input Coordinates 3-197
IX. FANS 3-198
X. POWER SUPPLY 3-201
A. Power Supply 3-201
B. Protection Mechanisms for the Power Supply Circuits 3-201

CHAPTER 4 MECHANICAL SYSTEM

I. EXTERNALS AND CONTROLS 4-1
A. Covers 4-1
B. Control Panel 4-3
C. Fans 4-4
II. DRIVE SYSTEM 4-10
A. Drum Drive System 4-10
B. Developing Motor Assembly 4-11
C. Pick-Up Drive Assembly 4-12
D. Scanner Drive Assembly 4-15
E. Fixing Drive Assembly 4-18
F. Waste Toner Feeding Drive Assembly 4-19
III. PICK-UP/FEEDING SYSTEM 4-21
A. Paper Deck 4-21
B. Pick-Up Assembly 4-27
C. Multifeeder Assembly 4-35
D. Duplexing Unit 4-37
E. Pre-Fixing Feeding Assembly 4-38
F. Pre-Duplexing Feeding Assembly ... 4-38
G. Delivery/Reversing Assembly 4-40
IV. TRANSFER UNIT 4-42
A. Transfer Unit 4-42
B. Transfer Belt Mount 4-53
C. Replacing the Separation Paper Guide Static Eliminating Wire 4-55
V. EXPOSURE SYSTEM 4-56
A. Original Exposure System 4-56
B. Pre-Exposure System 4-59
VI. LASER SYSTEM 4-60
A. Laser Unit 4-60
B. Image Position Correcting Mirror Unit 4-64
VII. HOPPER SYSTEM 4-72
A. Hopper Assembly 4-72
VIII. CHARGING SYSTEM 4-78
A. Primary Charging Assembly 4-78
B. Separation/Pre-Fixing Assembly 4-79
IX. PROCESS UNIT SYSTEM 4-80
A. Process Unit 4-80
B. Cleaning Assembly 4-85
C. Developing Assembly 4-87
D. Photosensitive Drum 4-90
E. SALT Sensor 4-91
F. No. 2 Scoop-Up Sheet 4-93
X. FIXING SYSTEM 4-94
A. Fixing Assembly 4-94
B. Upper Fixing Cleaner Assembly 4-102
C. Fixing Lower Cleaning Assembly .. 4-103
D. Fixing Oil Application Unit 4-105
XI. ELECTRICAL SYSTEM 4-107

CHAPTER 5 INSTALLATION

I. SELECTING THE SITE 5-1
II. INSTALLATION 5-3
  A. Unpacking 5-3
  B. Removing the Fixings, Supplying Fixing Oil, and Changing the Voltage Rating (240V North American Model) 5-5
  C. Supplying Toner 5-7
  D. Supplying Starter 5-15
  E. Preventing Deformation of Externals 5-19
  F. Mounting the Belt Retaining Members 5-20
  G. Mounting the Developing Bias Assembly Protection Member 5-21
  H-1. Installing the Paper Deck for CLC1000 5-24
  H-2. Installing the Paper Deck-H1 5-31
  H-3. Checking the Operation of the Paper Deck 5-33
  I. Checking Images and Operations ..5-35
III. RELOCATING THE MACHINE 5-36
IV. INSTALLING THE ORIGINAL TRAY 5-38
V. INSTALLING THE CONTROL CARD V 5-39

CHAPTER 6 MAINTENANCE AND SERVICING

I. PERIODICALLY REPLACED PARTS...... 6-2
II. CONSUMABLES AND DURABLES 6-5
  A. By the Copier's Hard Counter 6-5
  B. By the Soft Counter in Service Mode (COUNTER) 6-7
III. SCHEDULED SERVICING PROCEDURE 6-8
IV. SCHEDULED MAINTENANCE CHART . 6-9

CHAPTER 7 TROUBLESHOOTING IMAGE FAULTS/MALFUNCTIONS

GUIDE TO TABLES 7-1
I. MAINTENANCE AND SERVICING 7-3
  A. Image Adjustment Basic Procedure ... 7-3
  B. Scheduled Servicing 7-5
II. STANDARDS AND ADJUSTMENTS 7-7
  A. Image-Related Parts 7-7
  B. Original Illuminating System 7-13
  C. Photosensitive Drum-Related Parts 7-16
  D. Charging Assembly-Related Parts ..7-18
  E. Developing Assembly-Related Parts 7-19
  F. Transfer Belt Unit 7-23
  G. When Replacing the Pick-Up/ Feeding-Related Parts 7-25
  H. Laser Exposure System 7-36
  I. Fixing Assembly-Related Parts 7-41
  J. Electrical ADJUSTMENT 7-42
III. TROUBLESHOOTING IMAGE PROBLEMS 7-52
  A. Initial Checks 7-52
  B. Standard Image 7-53
  C. Test Prints 7-56
  D. Troubleshooting Image Faults 7-65
IV. TROUBLESHOOTING 7-88
  A. Troubleshooting Malfunctions 7-88
V. TROUBLESHOOTING FEEDING PROBLEMS 7-140
  A. Jams 7-140
  B. Feeding Faults 7-148
VI. ARRANGEMENT AND FUNCTION OF ELECTRICAL PARTS 7-149
  A. Sensors 7-150
  B. Lamps, Switches, Thermistors, and Heaters 7-156
  C. Clutches 7-160
  D. Solenoids 7-162
  E. Fans 7-164
  F. Motors 7-166
  G. PCBs 7-168

H. Variable Resistors (VR), Light-Emitting Diodes (LED), and Check Pins by PCB 7-170
VII. SERVICE MODE 7-187
A. Outline 7-187
B. Control Display Mode (DISPLAY) . 7-191
C. ADJUST (adjustment) 7-225
D. FUNCTION (function/inspection) .. 7-251
E. OPTION (options mode) 7-286
F. TEST PRINT (test print) 7-292
G. COUNTER (counter) 7-294
VIII. SELF DIAGNOSIS 7-296

APPENDIX

A. GENERAL TIMING CHART A-1
B. SIGNALS AND ABBREVIATIONS A-3
C. GENERAL CIRCUIT DIAGRAM A-11
D. DC CONTROLLER CIRCUIT DIAGRAM A-15
E. READER CONTROLLER PCB A-51
F. CCD DRIVER CIRCUIT DIAGRAM A-66
G. HVT CIRCUIT DIAGRAM A-70
H. SPECIAL TOOLS A-82
I. SOLVENTS AND OILS A-84

CHAPTER 1

GENERAL DESCRIPTION

I. FEATURES 1-1
II. SPECIFICATIONS 1-2
  A. Type 1-2
  B. Mechanisms 1-2
  C. Performance 1-3
  D. Others 1-5
III. LASER AND SAFETY MEASURES 1-9
  A. DHHS 1-9
  B. CDRH 1-9
  C. Points to Note When Handling the Laser Unit 1-10
IV. NAMES OF PARTS 1-11
  A. External View 1-11
  B. Cross Section 1-13
  C. Control Panel 1-15

I. FEATURES

1. Turns out as many as 30 copies per minute (both full-color and black-and white).
   The newly developed mechanism of four photosensitive drums processes 30 copies every minute.

2. 5000-sheet large capacity paper source.
   The addition of two cassettes (holding 500 sheets each) and a paper deck (4000 sheets) offers a source ready to supply 5000 sheets of paper.

3. Automatic duplexing mechanism.
   The built-in duplexing unit enables automatic copying on both sides of sheets.

4. Paper of up to 209 g.
   Postcards and other materials of heavy stock may be used for copying.

5. Various creative functions.
   In addition to such basic creative functions as editing of hue and brightness, installation of the ED Board A1 provides such complex creative functions as framing, gradation, and freehand.

6. Full line-up of options.
   A large number of options are designed for the CLC1000, including the Preview Monitor, RDF, and IPU-II.

II. SPECIFICATIONS

A. Type

Body	Console
Copyboard	Fixed
Light source	Halogen lamp
Lens	Lens array
Image reading	Photocells (BGR; 3-line CCD); CCD fixed, mirror scanning
Photosensitive medium	OPC drum (60 dia.)

Table 1-201

B. Mechanisms

Copying	Indirect electrostatographic
Charging	Corona
Exposure	Laser beam
Contrast adjustment	Automatic
Development	Toner projection (brush); development in Y, M, C, and Bk
Toner supply	Manual (750 g of Y, M, and C; 640 g of Bk)
Pick-up	2 front cassettes (special), paper deck, multifeeder
Retention	Static retention (concurrent with Y transfer)
Transfer	Blade (transfer belt)
Separation	Static
Drum Cleaning	Blade
Fixing	Heat roller (700 W, upper; 500 W, lower)

Table 1-202

C. Performance

Type of original		Sheet, 3-D object (2 kg max.)		
Maximum original size		11"x17" (279 mm x 432 mm)		
Reproduction ratio		Direct (±0.5%), default (±1.0%; Table 1-201), Zoom between 25% and 400% (±1.0%, in 1% increments), XY independent Zoom, AMS, XY-AMS, Zoom program		
Wait time (at 20°C)		8 min or less		
First copy time (A4/LTR)			CLC1000/3100	CLC1000S
		Plain paper	15.5 sec or less	16.5 sec or less
		/transparency	19 sec or less	20 sec or less
			18 sec or less	19 sec or less
Continuous copying		Up to 999 copies		
Copying speed		See Table 1-207.		
Copy size (paper size)	Cassette	Max.: 11"x17" (279 mm x 432 mm) Min.: STMT (216 mm x 139.5 mm)		
	Multifeeder	Max.: 305 mm x 457 mm Min.: Postcard (special)		
	Paper deck	LTR (279 mm x 216 mm)		
Paper type	Cassette	Plain paper (80 to 105 g/m^2), transparency (special), Thin paper (64 to 79 g/m^2)		
	Multifeeder	Thin paper (64 to 79 g/m^2), plain paper (80 to 105 g/m^2), thick paper (106 to 163 g/m^2; including cast coated paper, postcard), extra thick paper (164 to 209 g/m^2; including cast coated paper, postcard), special papers 1 and 2, transparency (special)		
	Paper deck	Plain paper (80 to 105 g/m^2), transparency (special), Thin paper (64 to 79 g/m^2)		
	Two-sided copying	Plain paper (105 g/m^2; automatic two-sided/manual two-sided)		
Cassette		Clawless, center reference, about 500 sheets of 81.4 g/m^2		
Multifeeder		about 250 sheets of 81.4 g/m^2		
Paper deck		410 mm (stacking height; about 4000 sheets of 81.4 g/m^2 paper)		
Copy tray capacity		250 sheets (approx.)		
Image margin		One-sided	Two-sided	
		Leading edge: 2.5 mm ±1.5 mm Left/right: 2.0 mm ±1.0 mm Trailing edge: 2.5 mm ±1.5 mm	Leading edge: 2.5 mm ±2.0 mm Left/right: 2.0 mm ±1.5 mm Trailing edge: 2.5 mm ±2.0 mm	
Non-image width		One-sided	Two-sided	
		Leading edge: 2.5 mm ±1.5 mm (0.5 ±0.5 mm in full image mode) Left/right: 2.0 mm ±1.0 mm (0 ±1.0 mm in full image mode) Trailing edge: 2.5 mm ±1.5 mm	Leading edge: 2.5 mm ±2.0 mm (0.5 ±0.5 mm in full image mode) Left/right: 2.0 mm ±1.5 mm (0 ±1.0 mm in full image mode) Trailing edge: 2.5 mm ±2.0 mm	
Main scanning direction		400 dpi		
Sub scanning direction		400 lpi		

Table 1-203

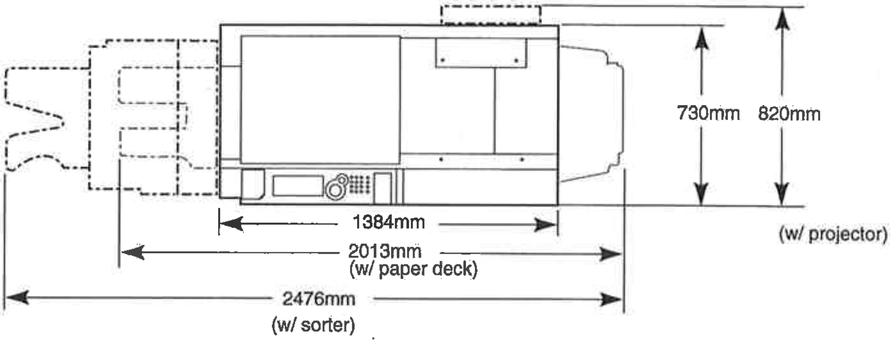
Density adjustment		Manual (9 steps), color AE, BE
Color mode		ACS, black, full-color
Color adjustment		Color balance, registration, hue/brightness adjustment, density range adjustment
Original mode		Text/printed photo, text/halide photo, text, printed photo, halide photo, map
Original detection		Size, position
Cassette selection		Auto paper selection, auto cassette change
Separation		Page separation, free division, enlargement separation, reduced page composition (w/ RDF), two-sided separation (w/ RDF)
Auto two-sided copying		One-sided to two-sided, two-sided to two-sided (w/ RDF), two-sided to one-sided (w/ RDF), page separation two-sided
Binding margin		Provided (right/left two-sided binding; margin adjustment)
Frame erasing		Original, book, sheet
Shift		Center, corner, selection
Transparency interleaf		Provided
One-touch adjustment		Provided
Interrupt		Provided
ID mode		Provided
Auto start		Provided
Auto clear		Provided (2-min standard; may be changed or disabled in user mode)
Auto power-off		Provided (2-hr standard; may be varied or disabled in user mode)
Pre-heating		Provided
Area selection/non-rectangular area selection		Provided (w/ ED Board A1)
Freehand selection		Provided (w/ editor)
Composition		Provided (w/ ED Board A1)
Image create		Provided (some functions w/ ED Board A1)
Color create		Provided (some functions w/ ED Board A1)
User mode	Specifications settings	Provided
	Standard mode change	Memory/Initialization
	Mode memory	9 modes; 3 in full set, 6 in non-area
	Timer	Auto clear time, auto power-off time
	Density correction	Provided
	Auto gradation correction	Provided
	Background level adjustment	Provided
	Text/photo level	Adjustment of text/photo separation (7 steps)
	Zoom fine adjustment	Provided
	Cleaning	Provided
	Transparency holder memory	Provided
	Thin paper source memory	Provided

Table 1-203

D. Others

Operating environment		For temperature, see Figure 5-1 in Chapter 5. For humidity, see Figure 5-1 in Chapter 5. (atmosphere between 810.6 hPa to 1013.3 hPa; 0.8 to 1.0 atm)	
Power supply		Power supply	Serial number
		200V	LFH XXXXXX (CLC1000 JPN)
			LKP XXXXXX (CLC2400 JPN)
		208V	NFH XXXXXX (CLC1000 UL)
			NKZ XXXXXX (CLC2400 UL)
			NSL XXXXXX (CLC3100 UL)
		230V	SFH XXXXXX (CLC1000 FRN)
			SRQ XXXXXX (CLC1000S FRN)
			TFH XXXXXX (CLC1000 GER)
			TBS XXXXXX (CLC1000S GER)
			UFH XXXXXX (CLC1000 AMS)
			UFT XXXXXX (CLC1000S AMS)
			PGN XXXXXX (CLC1000 ITA)
			PHN XXXXXX (CLC1000S ITA)
			PFH XXXXXX (CLC1000 general)
			RGT XXXXXX (CLC1000S general)
		240V	QFH XXXXXX (CLC1000 UK)
			QCK XXXXXX (CLC1000S UK)
			RFH XXXXXX (CLC1000 CA)
			RCM XXXXXX (CLC1000S CA)
Power consumption		Copying: 3 kW or less (approx.; A4, full color, continuous) Standby: 0.62 kW/h (approx.; reference only)	
Noise		73 dB (copying) 64 dB (standby)	Sound power level by ISO (1 m from machine)
Ozone		0.02 ppm or less (average over 8 hr)	
Consumables	Paper	Keep wrapped and protect against humidity.	
	Toner	Avoid direct rays of the sun; keep at 40°C or less.	
	Fixing oil	Avoid direct rays of the sun.	
Dimensions		See Figure 1-201.	
Weight		486.7 kg (body only) Copyboard (3.7 kg) Editor (4.9 kg) Paper Deck (25.5 kg)	

Table 1-205


730mm
820mm
(w/ projector)
1384mm
2013mm
(w/ paper deck)
2476mm
(w/ sorter)

Height 1000 mm (w/ copyboard cover)
1172 mm (w/ RDF-E1)
1422 mm (w/ projector)

Figure 1-201

Model	Reduction		Enlargement	
Japanese 6R5E	—	0.250	B4 → A3 B5R → A4R B5 → A4	1.153
	A3 → A5	0.500	A4R → B4 A5 → B5	1.223
	A3 → B5	0.611	A4R → A3 B5R → B4	1.414
	A3 → A4R B4 → B5R	0.707	A5 → A3	2.000
	B4 → A4R	0.815	—	4.000
	A3 → B4 A4R → B5R	0.865	—	—
North American 5R4E	—	0.250	LGL → 279 mm x 432 mm (11" x 17")	1.214
	—	0.500	—	1.294
	279 mm x 432 mm (11" x 17") → LTRR	0.647	LTRR → 279 mm x 432 mm (11" x 17")	2.000
	279 mm x 432 mm (11" x 17") → LGL	0.733	MINIT → LTRR	4.000
	LGL → LTRR	0.786	—	—
European 3R3E	—	0.250	A4R → A3	1.414
	A3 → A5	0.500	A5 → A3	2.000
	A3 → A4R	0.707	—	4.000
Others 5R5E	—	0.250	B4 → A3 B5R → A4R B5 → A4	1.153
	A3 → A5	0.500	A4R → B4 A5 → B5	1.223
	A3 → A4R B4 → B5R	0.707	A4R → A3 B5R → B4	1.414
	B4 → A4R	0.815	A5 → A3	2.000
	A3 → B4 A4R → B5R	0.865	—	4.000

Table 1-206

* Upper: CLC1000/3100, Lower: CLC1000S

Source	Side	Paper type	Shine	Copying speed		
				A4R/LTR	A3/ 279mm x 432mm (11"x17")	A4R/B4
Cassette	One-sided	Plain paper	Matte	15	6	9
			Standard	* 31 * 24	12	18
			Glossy	9	4	6
		OHP	Standard	6	4	4
Paper deck	One-sided	Plain paper	Matte	15	—	—
			Standard	31	—	—
			Gloss	9	—	—
Duplexing	2nd side	Plain paper	Standard	21	9	12
			Glossy	9	4	6
Multifeeder	One-sided/ 2nd side	Plain paper	Standard	21	9	12
			Glossy	9	4	6
		Thick paper	Standard	9	4	6
			Glossy	6	4	4
		Extra thick paper	Standard	6	4	4
			Glossy	6	4	4
		Transparency	Standard	6	4	4

Table 1-207 Copying Speed (copies/minute)

Specifications subject to change without notice.

REF.

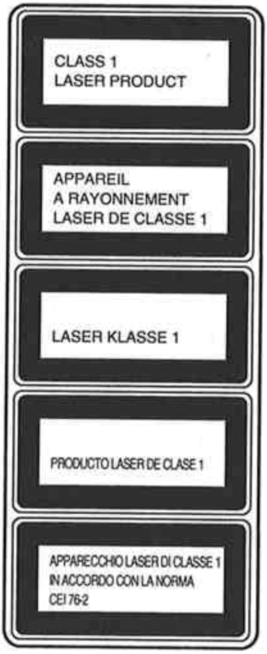
The CLC1000 varies the fixing speed to a specific standard to produce the degree of shine selected by the user.
A higher fixing speed decreases the shine, producing a matte effect. On the other hand, a lower fixing speed increases the shine, producing a glossy effect.

III. LASER AND SAFETY MEASURES

A. DHHS

The CLC1000 has been approved as Class 1 equipment under the Radiation Performance Standards of the Department of Health and Human Services (DHHS), established in the U.S.A. in 1968.

The approval represents that the product has shown to be free of harmful laser beams; the optical system of the product is designed such that the laser beams are confined in a protective housing and cannot escape the product while in use.



CLASS 1
LASER PRODUCT

APPAREIL
A RAYONNEMENT
LASER DE CLASSE 1

LASER KLASSE 1

PRODUCTO LASER DE CLASE 1

APPARECCHIO LASER DI CLASSE 1
IN ACCORDO CON LA NORMA
CEI 76-2

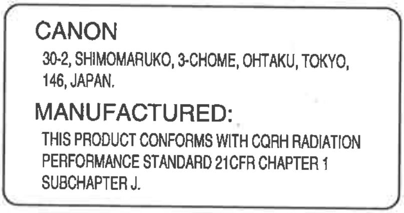
Figure 1-301

B. CDRH

On August 2, 1976, the Center for Devices and Radiological Health (CDRH) of the Food and Drug Administration of the U.S.A. put an act in force to deal with laser devices.

Under the act, laser devices manufactured on and after August 1, 1976, may not be marketed in the United States without approval.

Figure 1-302 shows the label which serves as proof of approval under the act; the label is required to be attached to all laser devices marketed in the U.S.A.



CANON
30-2, SHIMOMARUKO, 3-CHOME, OHTAKU, TOKYO,
146, JAPAN.

MANUFACTURED:
THIS PRODUCT CONFORMS WITH CQRH RADIATION
PERFORMANCE STANDARD 21CFR CHAPTER 1
SUBCHAPTER J.

Figure 1-302

Some descriptions may not apply to certain product models.

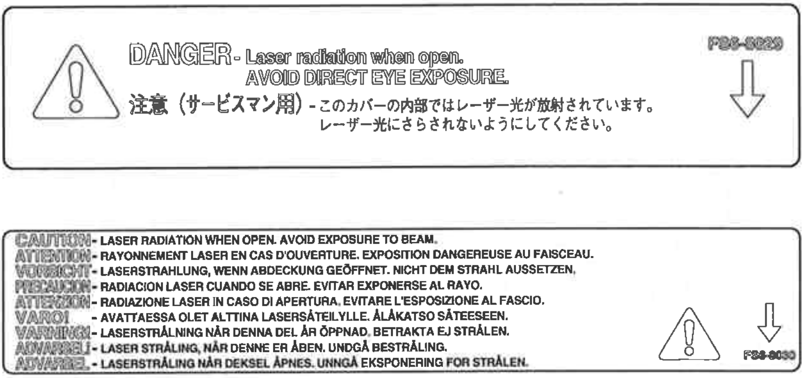
C. Points to Note When Handling the Laser Unit

When servicing the optical unit of the product, take adequate care not to interrupt the laser path with a tool having a high reflectance.

As a rule, remove the watch, rings, or the like before work; such items tend to reflect the beam and damage the eyes.

Remain alert when servicing inside the covers on which the label is attached.

The machine is equipped with a shutter which blocks out the laser beam when the front left door is opened; therefore, when images are checked with the front left door open, the shutter needs to be held open using a door switch actuator. Keep these in mind when such work is necessary.



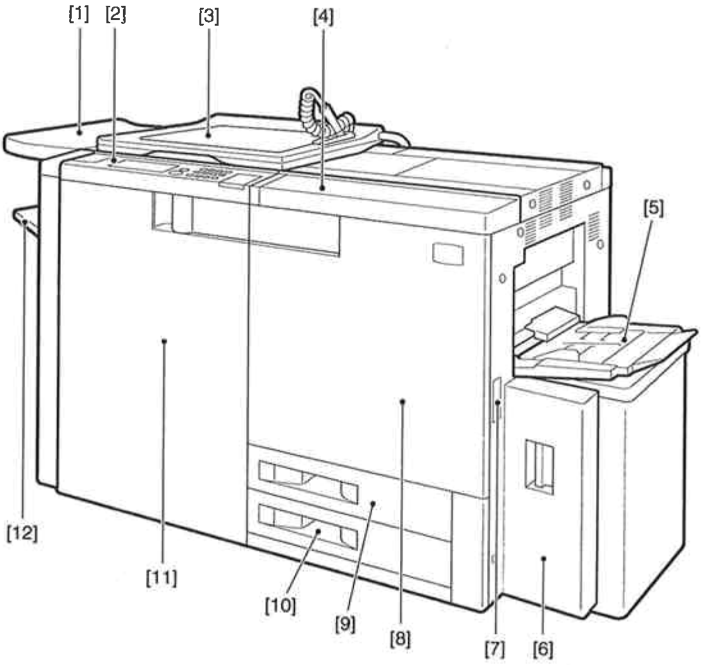
DANGER - Laser radiation when open.
AVOID DIRECT EYE EXPOSURE.
注意（サービスマン用）- このカバーの内部ではレーザー光が放射されています。
レーザー光にさらされないようにしてください。
FS6-8029

CAUTION - LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM.
ATTENTION - RAYONNEMENT LASER EN CAS D'OUVERTURE. EXPOSITION DANGEREUSE AU FAISCEAU.
VORSICHT - LASERSTRAHLUNG, WENN ABDECKUNG GEÖFFNET. NICHT DEM STRAHL AUSSETZEN.
PRECAUCION - RADIACION LASER CUANDO SE ABRE. EVITAR EXPONERSE AL RAYO.
ATTENZIONE - RADIAZIONE LASER IN CASO DI APERTURA. EVITARE L'ESPOSIZIONE AL FASCIO.
VARO! - AVATTAESSA OLET ALTTINA LASERSÅTEILYLLE. ÅLÅKATSO SÅTEESEEN.
VARNING! - LASERSTRÅLNING NÅR DENNA DEL ÅR ÖPPNAD. BETRAKTA EJ STRÅLEN.
ADVARSEL! - LASER STRÅLING, NÅR DENNE ER ÅBEN. UNDGÅ BESTRÅLING.
ADVARSEL - LASERSTRÅLING NÅR DEKSEL ÅPNES. UNNGÅ EKSPONERING FOR STRÅLEN.
FS6-8030

Figure 1-303

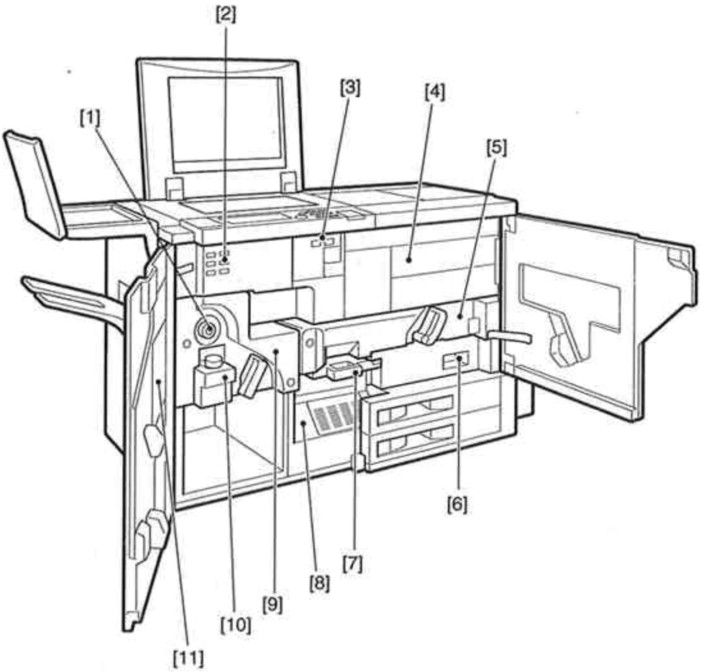
IV. NAMES OF PARTS

A. External View



[1]	Original tray
[2]	Control panel
[3]	Editor (option)
[4]	Hopper cover (toner supply opening)
[5]	Multifeeder
[6]	Paper deck (option in Japan)
[7]	Control key/power switch
[8]	Front cover (right)
[9]	Cassette 1
[10]	Cassette 2
[11]	Front cover (left)
[12]	Copy tray

Figure 1-401



[1]	Fixing assembly knob	[7]	Pre-duplexing feeding assembly
[2]	Copy counter	[8]	Waste toner box
[3]	Front cover switch	[9]	Fixing/delivery/reversing unit
[4]	Hopper assembly	[10]	Fixing oil bottle
[5]	Transfer unit	[11]	Document holder
[6]	Duplexing unit		

Figure 1-402

B. Cross Section

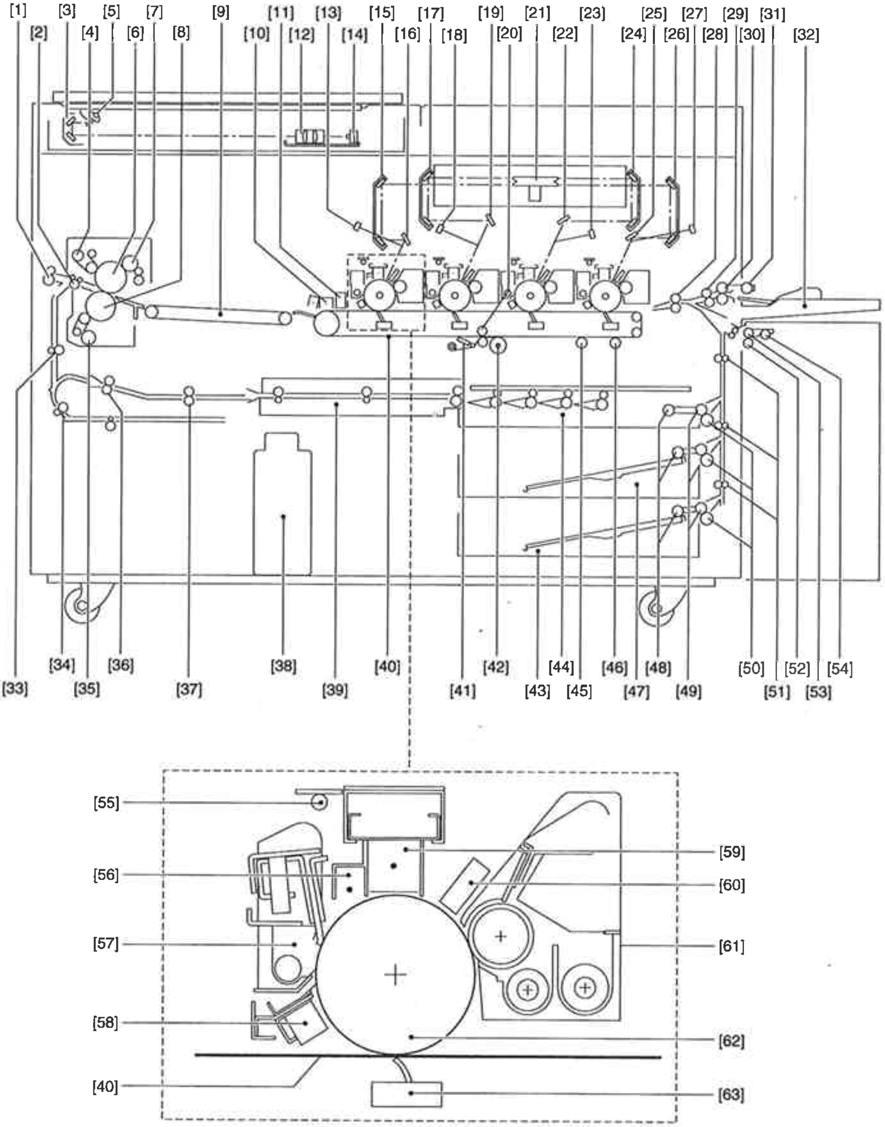

[1]
[2]
[3]
[4]
[5]
[6]
[7]
[8]
[9]
[10]
[11]
[12]
[13]
[14]
[15]
[16]
[17]
[18]
[19]
[20]
[21]
[22]
[23]
[24]
[25]
[26]
[27]
[28]
[29]
[30]
[31]
[32]
[33]
[34]
[35]
[36]
[37]
[38]
[39]
[40]
[41]
[42]
[43]
[44]
[45]
[46]
[47]
[48]
[49]
[50]
[51]
[52]
[53]
[54]
[55]
[56]
[57]
[58]
[40]
[59]
[60]
[61]
[62]
[63]

Figure 1-403

[1] External delivery roller
[2] Internal delivery roller
[3] No. 2 mirror mount
[4] Upper fixing web
[5] Scanning lamp
[6] Upper fixing roller
[7] Oil applying roller
[8] Lower fixing roller
[9] Pre-fixing feeding assembly
[10] Pre-separation/fixing charging assembly
[11] Image position correction CCD unit
[12] Lens
[13] Bk BD sensor
[14] CCD
[15] Bk image position correction mirror
[16] Bk No. 3 mirror
[17] C image position correction mirror
[18] C BD mirror
[19] C No. 3 mirror
[20] Internal static eliminating roller
[21] Polygon mirror/monitor
[22] M No. 3 mirror
[23] M BD sensor
[24] M image position correction mirror
[25] Y No. 3 mirror
[26] Y image position correction mirror
[27] Y BD mirror
[28] Registration roller
[29] Thick paper detection roller
[30] Multifeeder feeding roller
[31] Multifeeder pick-up roller
[32] Multifeeder tray
[33] Delivery vertical path roller
[34] Duplexing reversal inlet roller
[35] Lower fixing roller web
[36] Duplexing reversal feeding roller
[37] Duplexing reversal outlet roller
[38] Waste toner box
[39] Pre-duplexing feeding assembly
[40] Transfer belt
[41] Transfer cleaning blade
[42] Transfer belt cleaning web
[43] Cassette 2
[44] Duplexing unit
[45] Polishing roller
[46] Oil removing roller
[47] Cassette 1
[48] Pick-up roller
[49] Feeding roller
[50] Separation roller
[51] Pick-up vertical path roller
[52] Paper deck separation roller
[53] Paper deck feeding roller
[54] Paper deck pick-up roller
[55] Pre-exposure lamp
[56] Pre-primary charging assembly
[57] Photosensitive drum cleaner
[58] SALT sensor
[59] Primary charging assembly
[60] Potential sensor
[61] Developing assembly
[62] Photosensitive drum
[63] Transfer charging assembly

C. Control Panel

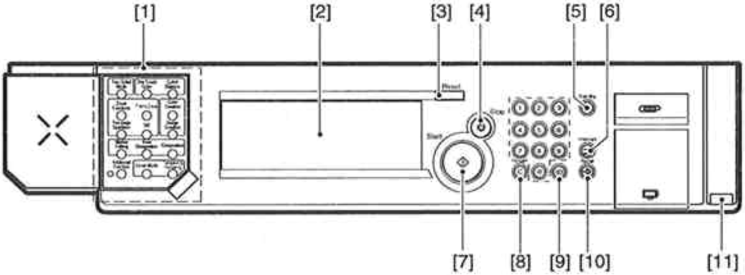


Figure 1-404

Key	Description	Remarks
[1] Extended Copying Mode keys	Press the appropriate key to select a specific copying mode.	
[2] Message display	Indicates the selected copying mode or provides instructions.	
[3] Reset key	Press it to cancel the selected copying mode, thereby returning to standard mode.	
[4] Stop key	Press it to stop continuous copying.	
[5] Pre-Heat key	Press it to start pre-heating mode or to stop it.	
[6] Interrupt key	Press it to suspend on-going copying and to make a copy.	
[7] Start key	Press it to start copying.	
[8] Clear key	Press it to change the copy count or settings.	
[9] ID key	Press it to start ID mode.	A press on the key starts ID mode, rejecting subsequent copying commands without input of an ID.
[10] Call key	Press it to recall up to three previous copying modes.	
[11] Pilot lamp	Glows green when power is turned on.	

Table 1-401

Instructions to the User

1. When making two-sided copies in manual mode, it is important to correct the curling on the leading edge by reversing the direction of the curl.

2. The transfer medium may be any of the following seven types:

Plain paper:	regular paper (80 to 105 g/m^2)
Thin paper:	paper thinner than plain paper (64 to 79 g/m^2)
Thick paper:	paper thicker than plain paper (106 to 163 g/m^2)
Extra thick paper:	thicker than thick paper (164 to 209 g/m^2)
Transparency:	transparency film
Special paper 1:	Paper identified as such on package
Special paper 2:	Paper identified as such on package

3. Points to Note about Transparencies
   - Avoid contact with the copying side, by holding at the edge.
   - Fan out each stack before setting it in a cassette or the multifeeder.
   - Remove from the tray immediately after copying to avoid jamming.
   - Keep unused transparencies in a box, and store them avoiding high temperature and humidity.

4. Points to Note about the Orientation of Transparencies
   - Orient each transparency so that it is fed in the correct direction.

■ When Placing in a Cassette,
- If vertical, orient it so that the white triangle at the corner is front left [1].
- If horizontal, orient it so that the white triangle at the corner is front right [2].

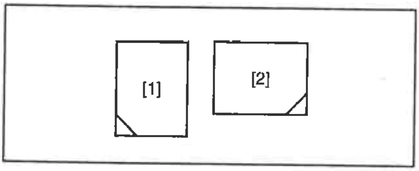


Figure 1-405

■ Placing on the Manual Feed Tray
- If vertical, orient it so that the white triangle is front right [3].
- If horizontal, orient it so that the white triangle is front left [4].

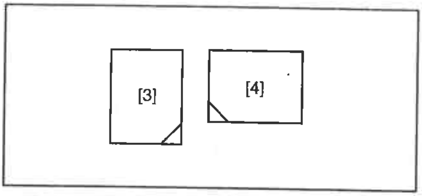


Figure 1-406

5. Cassette Sheet
   In a high humidity environment, paper is likely to become moist and will adversely affect copying operation. If such is the case, advise the user to place the cassette sheet on the bottom of the cassette tray.

CHAPTER 2

COPYING PROCESS

I. IMAGE FORMATION 2-1
  A. Outline 2-1
  B. Static Latent Image Formation Block 2-3
  C. Pre-Exposure (step 1) 2-3
  D. Primary Charging (step 2) 2-4
  E. Laser Exposure (step 3) 2-4
  F. Development (step 4) 2-5
  G. Retention/Transfer (step 5) 2-6
  H. Separation (step 6) 2-7
  I. Fixing (step 7) 2-7
  J. Photosensitive Drum Cleaning 2-8
II. AUXILIARY PROCESS 2-9
  A. Pre-Primary Charging 2-9
  B. Pre-Fixing Charging 2-9
  C. Grounding Roller 2-10
  D. Static Eliminator 2-10
  E. Transfer Belt Cleaning 2-11
III. LIMITATIONS 2-12
  A. Outline 2-12
  B. Characteristics 2-12

I. IMAGE FORMATION

A. Outline

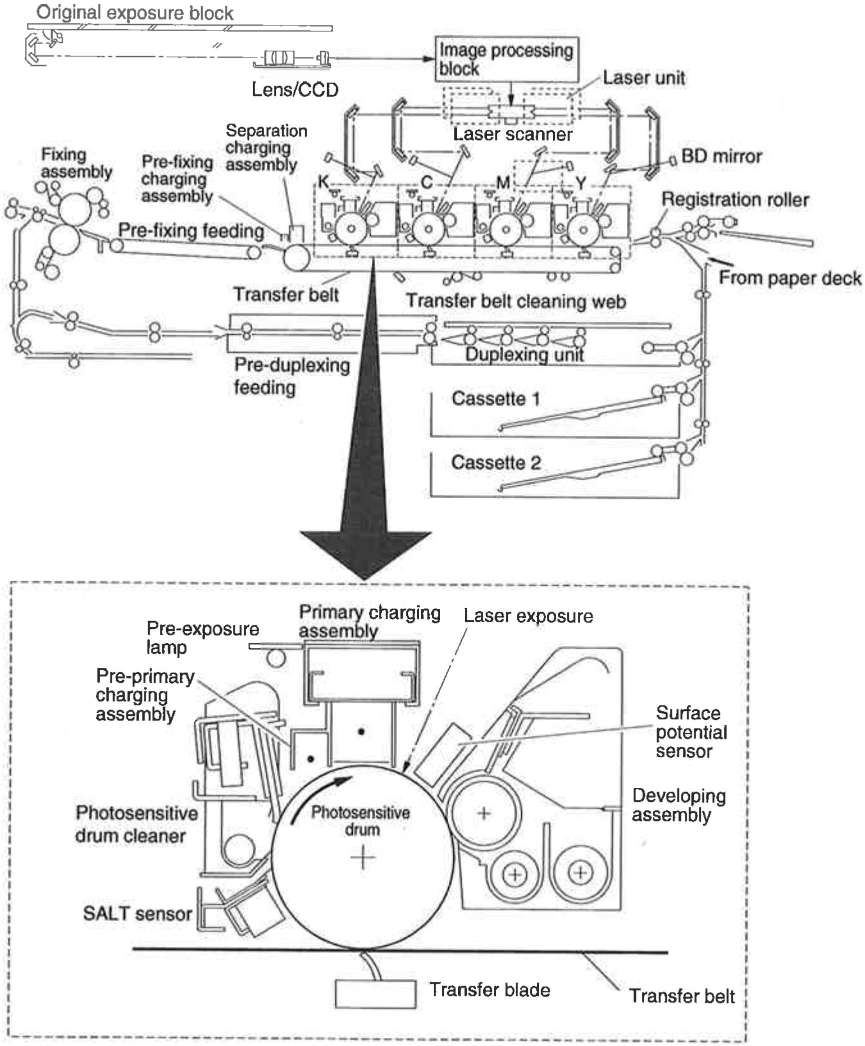

Original exposure block
Lens/CCD
Image processing block
Laser unit
Laser scanner
BD mirror
Fixing assembly
Pre-fixing charging assembly
Separation charging assembly
K
C
M
Y
Registration roller
Pre-fixing feeding
From paper deck
Transfer belt
Transfer belt cleaning web
Duplexing unit
Pre-duplexing feeding
Cassette 1
Cassette 2
Primary charging assembly
Laser exposure
Pre-exposure lamp
Pre-primary charging assembly
Surface potential sensor
Developing assembly
Photosensitive drum cleaner
Photosensitive drum
SALT sensor
Transfer blade
Transfer belt

Figure 2-101

For each process color, the CLC1000 uses one set of components; i.e., photosensitive drum, developing assembly, cleaning unit. (In other words, four sets are used for full color reproduction.)

The CLC1000's photosensitive drum consists of a photo-conductive layer on the other side (OPC) and a conductive aluminum substrate on the inside.

The CLC1000 differs from black-and-white copiers for the following:

Light is shined on a color original, and the reflected light is separated by filters into the three primary colors of light for conversion by a CCD.

Using analog video signals (RGB) from the CCD, video signals are generated for each process color (YMCK) to drive a semiconductor laser.

A laser beam is directed to the appropriate photosensitive drum to develop the image representing the corresponding process color (of toner; complementary to the corresponding filter) for transfer to paper; the step is executed alike for Y, M, C, and K.

The resulting image is fixed to the paper, producing a color copy of the original.

The CLC1000 uses four photosensitive drums for transfer of images to paper, and a transfer belt is used to ensure that paper is moved horizontally under each photosensitive drum for transfer.

The image formation block consists of the following eight steps:

Step 1	Pre-exposure
Step 2	Primary charging
Step 3	Laser exposure
Step 4	Development
Step 5	Retention/transfer
Step 6	Separation
Step 7	Fixing
Step 8	Photosensitive drum cleaning

Auxiliary processes include pre-primary charging, pre-fixing charging, and transfer belt cleaning/static elimination.

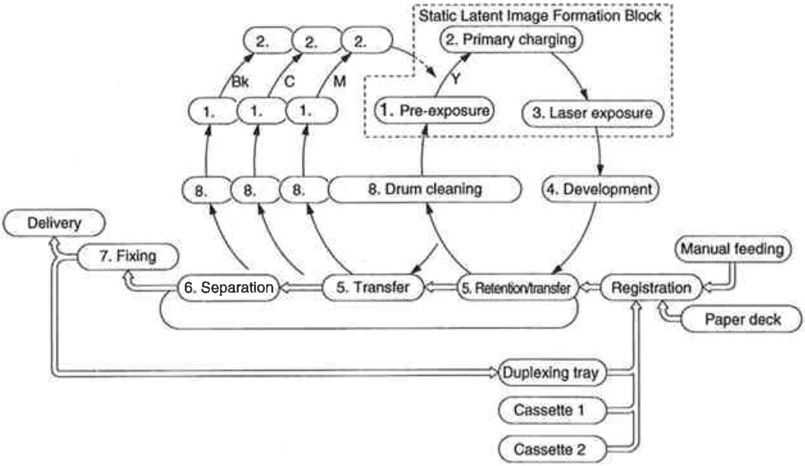

Static Latent Image Formation Block
2.
2.
2.
2. Primary charging
Bk
C
M
Y
1.
1.
1.
1. Pre-exposure
3. Laser exposure
8.
8.
8.
8. Drum cleaning
4. Development
Delivery
7. Fixing
Manual feeding
6. Separation
5. Transfer
5. Retention/transfer
Registration
Paper deck
Duplexing tray
Cassette 1
Cassette 2

Figure 2-102

B. Static Latent Image Formation Block

This block consists of three steps and ultimately leaves negative charges in the areas of the photosensitive drum representing the white (light) areas of the original, while neutralizing the charges in the areas representing the black (dark) areas of the original.

Such an image created on the photosensitive drum using differences in potential is not visible to the human eye and is called a static latent image.

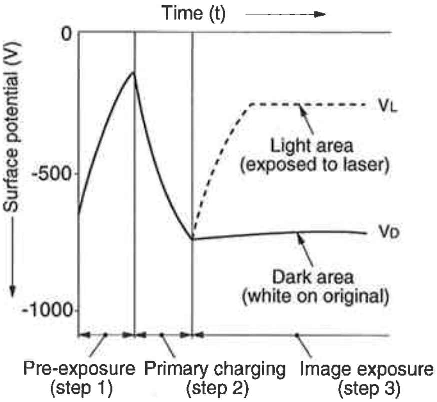


Figure 2-103

C. Pre-Exposure (step 1)

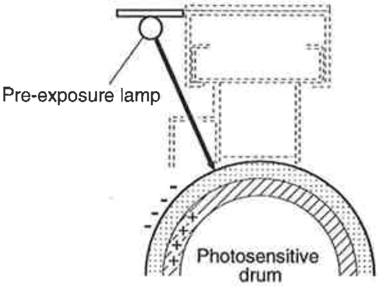


Figure 2-104

In preparation for primary charging, the light from the pre-exposure lamp is directed to the surface of the photosensitive drum to remove residual charges, thereby preventing uneven copy density.

D. Primary Charging (step 2)

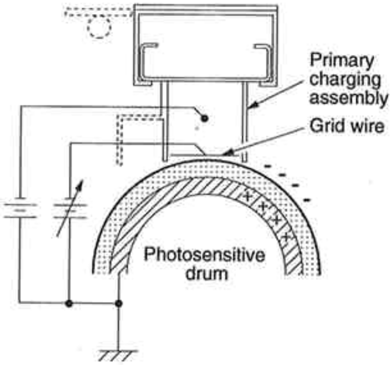

Primary
charging
assembly
Grid wire
Photosensitive
drum

Figure 2-105

The negative corona of the primary charging assembly charges the surface of the photosensitive drum to a uniform negative potential, establishing primary potential.

Since the surface potential of the charged photosensitive drum is determined by the potential of the grid, a bias is applied to the grid to ensure a specific drum surface potential.

E. Laser Exposure (step 3)

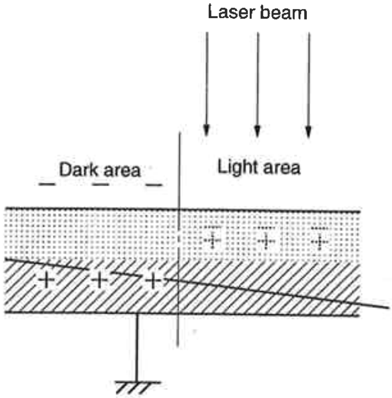

Laser beam
Dark area
Light area

Figure 2-106

A laser beam of an intensity suited to the image density of the original is directed to the surface of the photosensitive drum, thereby neutralizing the charges on the surface. Such areas are called the light areas of the photosensitive drum and will later attract toner in step 4 (development).

F. Development (step 4)

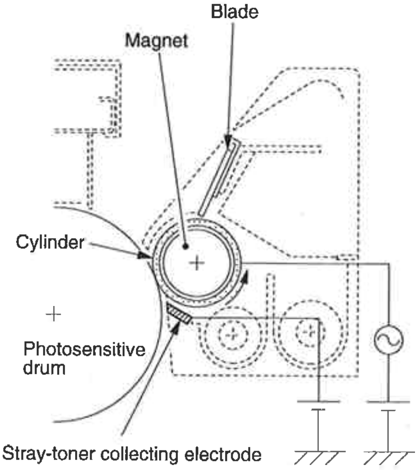


Figure 2-107

The process in which the latent static image on the surface of the photosensitive drum is turned into a visible image is called development.

Since the CLC1000 is designed so that the areas on the surface of the photosensitive drum exposed to a laser beam will attract toner, the toner is charged to a negative potential (the same potential as in primary charging).

As shown in Figure 2-107, the developing assembly consists of a developing cylinder and a magnetic blade. The developing cylinder in turn consists of a fixed magnet and a cylinder which rotates around the magnet.

The developer is composed of toner (mainly resins and dye) and carrier (iron powder) mixed at a specific ratio. The toner and the carrier are charged to a negative and a positive potential, respectively, by friction against the rotating cylinder.

The developer is held in the form of a brush over the surface of the cylinder within the magnetic field of the fixed magnet, and is deposited in a uniform layer by a blade.

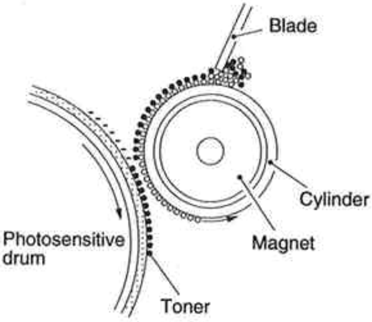


Figure 2-108

Double blanking pulses and a DC bias (negative component) are applied to the developing cylinder to improve development efficiency and reproduction of highlighted areas, resulting in a developing bias with a larger negative than positive component.

During copying, toner is attracted to the light areas of the photosensitive drum because of the drum surface potential and the negative potential of the developing bias, turning the latent static image into a visible image. Excess toner is then repelled by the photosensitive drum because of the drum surface potential and the positive component of the developing bias.

The electrode plate under the developing cylinder is supplied with a high voltage (positive) to attract stray toner, thereby preventing soiling of the inside of the machine.

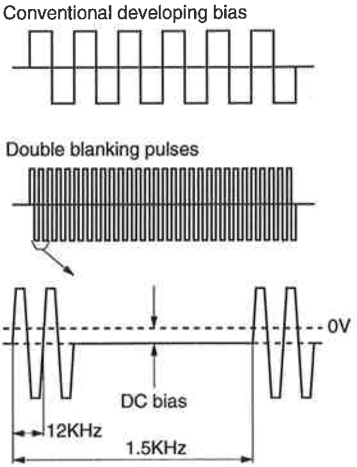

Conventional developing bias
Double blanking pulses
0V
DC bias
12KHz
1.5KHz

Figure 2-109

G. Retention/Transfer (step 5)

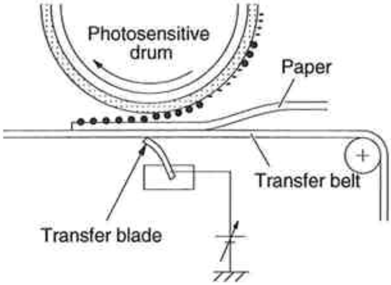

Photosensitive drum
Paper
Transfer belt
Transfer blade

Figure 2-110

The toner on the surface of the photosensitive drum is transferred to paper where the paper and the photosensitive drum come into contact. This is done by applying a high-voltage constant current through a blade and onto the back of paper (from behind the transfer belt).

The CLC1000 uses the same transfer charges to retain paper on the transfer belt. For the first color (Y), transfer occurs at the same time as when the paper is drawn to the transfer belt by the work of transfer charges.

H. Separation (step 6)

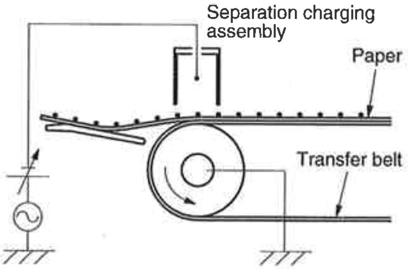

Separation charging assembly
Paper
Transfer belt

Figure 2-111

The CLC1000 separates paper from the transfer belt using the rigidity of paper (curvature separation). Since thin paper tends to have little rigidity, it can wrap around the transfer belt, failing to separate. To prevent such a problem, the separation charging assembly applies AC corona and DC bias, facilitating the separation of paper from the transfer belt.

I. Fixing (step 7)

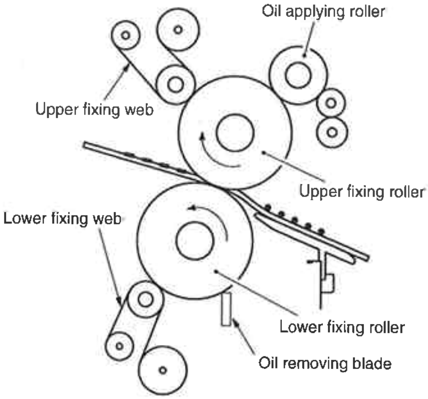

Oil applying roller
Upper fixing web
Upper fixing roller
Lower fixing web
Lower fixing roller
Oil removing blade

Figure 2-112

Depending on the selected color mode, a maximum of four transfers takes place before the paper is forwarded to the fixing assembly.

A pair of fixing rollers move the paper under pressure and heat, thereby melting the toner particles (of four colors) to produce as many colors as needed, reproducing the original images and fusing them into the fibers of the paper.

To prevent adhesion of toner from paper to the surfaces of the fixing rollers (offset), the oil applying roller constantly supplies silicone oil to the rollers.

The upper fixing roller is cleaned by a cleaning web, and the lower fixing roller is cleaned by a cleaning web and a cleaning blade.

J. Photosensitive Drum Cleaning

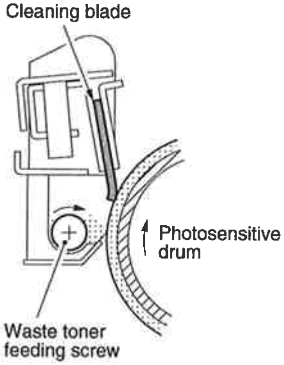

Cleaning blade
Photosensitive drum
Waste toner feeding screw

Figure 2-113

In preparation for the next copying run, the cleaning blade scrapes off the residual toner from the surface of the drum.

The collected toner is moved by the waste toner feeding screw to the rear of the copier and is collected in the waste toner case.

II. AUXILIARY PROCESS

A. Pre-Primary Charging

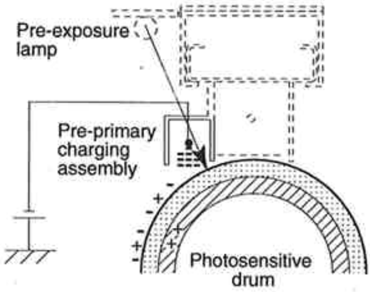

Pre-exposure lamp
Pre-primary charging assembly
Photosensitive drum

Figure 2-201

To prevent drum memory caused by the positive charges of transfer, the CLC1000 executes pre-primary charging simultaneously with pre-exposure.

Specifically, negative corona charges are applied to the photosensitive drum before primary charging to remove localized positive charges remaining on the photosensitive drum.

B. Pre-Fixing Charging

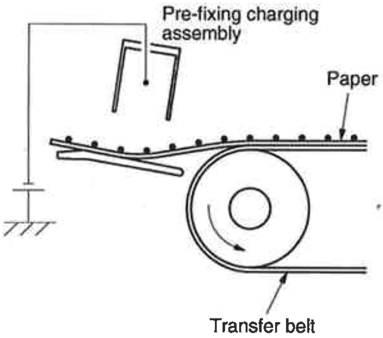

Pre-fixing charging assembly
Paper
Transfer belt

Figure 2-202

The toner on the paper after separation is more or less neutralized and yet is subject to change while the paper is forwarded.

The CLC1000 causes its pre-fixing charging assembly to apply a negative DC bias immediately after separation of paper from the transfer belt to retain the toner on the paper, thereby preventing the toner from moving astray or causing offset during fixing.

C. Grounding Roller

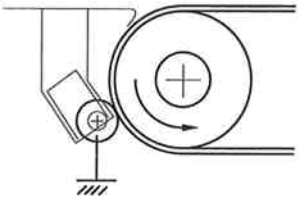


Figure 2-203

The potential on the transfer belt differs between areas in contact with paper and areas not in contact. To maintain an even potential and, thereby, to increase the efficiency of cleaning performed in the next step, the belt is grounded by means of a grounding roller.

D. Static Eliminator

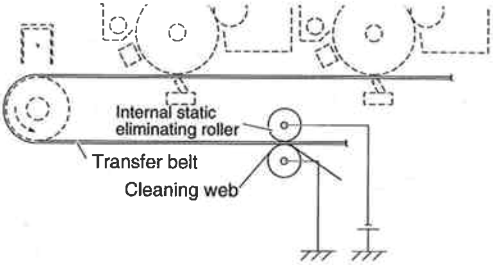


Figure 2-204

The transfer belt after separation of paper holds residual charges that occur during transfer. The static eliminator is used to remove* charges from the transfer belt preparing for retention and transfer for the next copying run.

*Actually, by applying negative charges.

E. Transfer Belt Cleaning

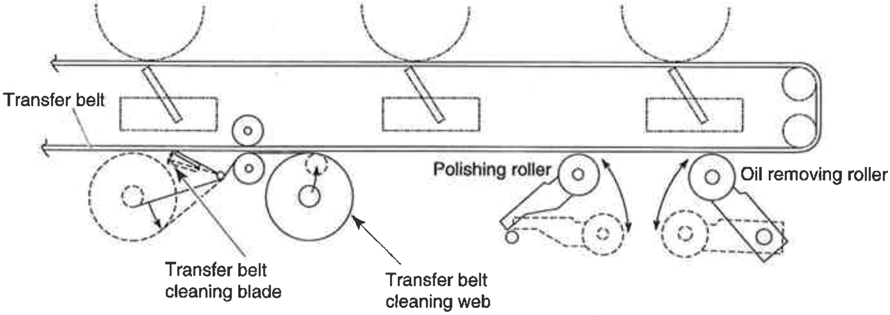

Transfer belt
Polishing roller
Oil removing roller
Transfer belt cleaning blade
Transfer belt cleaning web

Figure 2-205

See the table for a description and the main use of the cleaning mechanism used to clean the CLC1000's transfer belt:

Transfer belt cleaning blade	Removes toner from the transfer belt during registration control. Removes oil from the transfer belt.
Transfer belt cleaning web	
Oil removing roller	Removes oil from the transfer belt that builds up after two-sided copying.
Polishing roller	Roughens the surface of the transfer belt to prevent adhesion of oil from the transfer belt to the photosensitive drum. And removes paper lint on the transfer belt.

III. LIMITATIONS

A. Outline

There are many difficulties in making high quality color prints by an electrophotographic process, some of which are discussed below. The Color Laser Copier has many design features to minimize these difficulties, and they are very successful.

However, the prints are not of the same quality as those in high-quality printed material, such as magazine illustrations and photographs.

Each product has its own advantages and limitations, and users of the copying machine should be made aware of the capabilities of the machine.

B. Characteristics

1. OPC

The sensitivity of the OPC used for the photosensitive drum is subject to the environment in which the machine is used and changes over time.

2. Reflectance of Toner

The ideal toners, representing the primary colors (yellow, magenta, and cyan), should absorb 100 percent of the spectrum of their complementary colors and reflect 100 percent of the rest. Such toners, however, are not available at present.

3. Dry Electrostatic Photography and Gradation

As shown in Figure 2-301, it is impossible to reproduce the density of the original document exactly the same because of the characteristics of photosensitive material and toner.

The powder toner, further, limits the details of the image to the diameter of its individual particles.

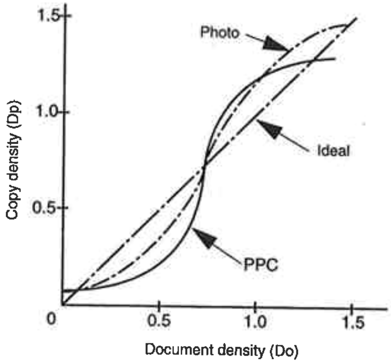


Figure 2-301

These limitations, however, have been solved to a point where they will not present appreciable problems by controlling the image processing by the scanner unit.

CHAPTER 3

OPERATIONS AND TIMING

- I. BASIC MECHANISMS 3-1
  - A. Functional Construction 3-1
  - B. Outline of Electrical Circuitry 3-2
  - C. Inputs to and Outputs from Major PCBs 3-3
  - D. Sequence of Basic Operations 3-26
- II. ORIGINAL EXPOSURE SYSTEM 3-29
  - A. Outline 3-29
  - B. Sequence of Basic Operations (original exposure system) 3-30
  - C. Scanner Motor 3-32
  - D. Changing the Reproduction Ratio 3-33
  - E. Controlling the Intensity of the Scanning Lamp 3-34
- III. IMAGE PROCESSING SYSTEM 3-36
  - A. Outline 3-36
  - B. CCD/CCD Driver 3-37
  - C. Analog Image Processing 3-38
  - D. Digital Image Processing 3-39
- IV. LASER EXPOSURE SYSTEM 3-62
  - A. Outline 3-62
  - B. Sequence of Operations (laser exposure system) 3-64
  - C. Laser Scanner Motor 3-65
  - D. Generating the BD Signal 3-66
  - E. Video Controller 3-67
  - F. Laser Driver 3-72
  - G. Image Position Correction 3-74
- V. IMAGE FORMATION SYSTEM 3-84
  - A. Outline 3-84
  - B. Basic Sequence of Operations (image formation system) 3-86
  - C. Stabilizing Images 3-87
  - D. Primary Charging Assembly 3-97
  - E. Developing Assembly 3-102
  - F. Cleaning the Photosensitive Drum 3-120
  - G. Controlling the Transfer Unit Charging Mechanism 3-122
- VI. PICK-UP/FEEDING ASSEMBLY 3-127
  - A. Outline 3-127
  - B. Pick-Up Assembly 3-130
  - C. Paper Deck 3-145
  - D. Duplexing Unit 3-151
  - E. Transfer Unit 3-160
  - F. Pre-Fixing Feeding 3-177
  - G. Fixing/Delivery Assembly 3-178
  - H. Detecting Jams 3-189
- VII. CONTROL PANEL 3-192
  - A. Outline 3-192
  - B. Operation 3-192
- VIII. EDITOR 3-195
  - A. Outline 3-195
  - B. Operation 3-195
  - C. Zero-Level Adjustment for Input Coordinates 3-197
- IX. FANS 3-198
- X. POWER SUPPLY 3-201
  - A. Power Supply 3-201
  - B. Protection Mechanisms for the Power Supply Circuits 3-201

I. BASIC MECHANISMS

A. Functional Construction

The CLC1000 consists of six functional blocks: pick-up/feeding, original exposure, image processing, laser exposure, image formation, and control.

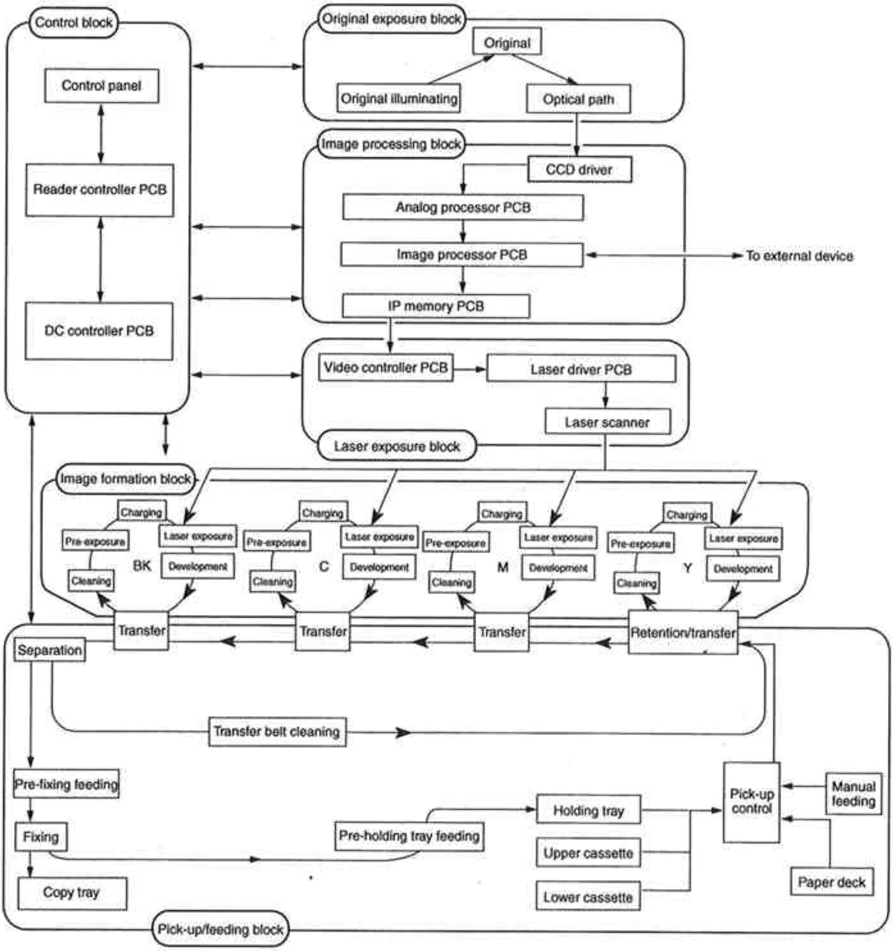

Control block
Control panel
Reader controller PCB
DC controller PCB
Original exposure block
Original
Original illuminating
Optical path
Image processing block
CCD driver
Analog processor PCB
Image processor PCB
To external device
IP memory PCB
Video controller PCB
Laser driver PCB
Laser scanner
Laser exposure block
Image formation block
Charging
Pre-exposure
Laser exposure
Cleaning
Development
BK
C
M
Y
Transfer
Retention/transfer
Separation
Transfer belt cleaning
Pre-fixing feeding
Fixing
Copy tray
Pre-holding tray feeding
Holding tray
Upper cassette
Lower cassette
Pick-up control
Manual feeding
Paper deck
Pick-up/feeding block

Figure 3-101

B. Outline of Electrical Circuitry

The CLC1000's major electrical mechanisms are controlled by the microprocessor mounted on the reader controller PCB and the DC controller PCB.

The controller PCB and the DC controller PCB each are equipped with a lithium battery to back up important data.

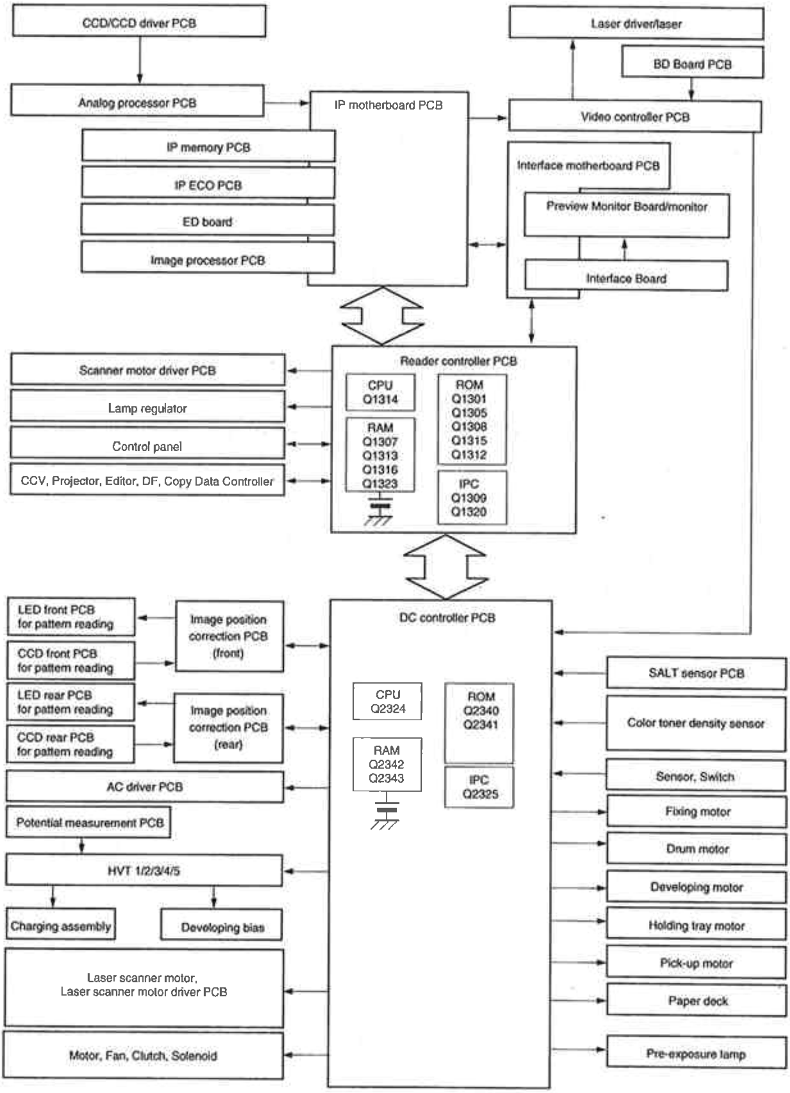

CCD/CCD driver PCB
Analog processor PCB
IP motherboard PCB
IP memory PCB
IP ECO PCB
ED board
Image processor PCB
Laser driver/laser
BD Board PCB
Video controller PCB
Interface motherboard PCB
Preview Monitor Board/monitor
Interface Board
Reader controller PCB
CPU Q1314
RAM Q1307 Q1313 Q1316 Q1323
ROM Q1301 Q1305 Q1308 Q1315 Q1312
IPC Q1309 Q1320
Scanner motor driver PCB
Lamp regulator
Control panel
CCV, Projector, Editor, DF, Copy Data Controller
DC controller PCB
CPU Q2324
RAM Q2342 Q2343
ROM Q2340 Q2341
IPC Q2325
LED front PCB for pattern reading
CCD front PCB for pattern reading
LED rear PCB for pattern reading
CCD rear PCB for pattern reading
Image position correction PCB (front)
Image position correction PCB (rear)
AC driver PCB
Potential measurement PCB
HVT 1/2/3/4/5
Charging assembly
Developing bias
Laser scanner motor, Laser scanner motor driver PCB
Motor, Fan, Clutch, Solenoid
SALT sensor PCB
Color toner density sensor
Sensor, Switch
Fixing motor
Drum motor
Developing motor
Holding tray motor
Pick-up motor
Paper deck
Pre-exposure lamp

Figure 3-102

C. Inputs to and Outputs from Major PCBs

Inputs to and Outputs from the Reader Controller PCB (1/3)

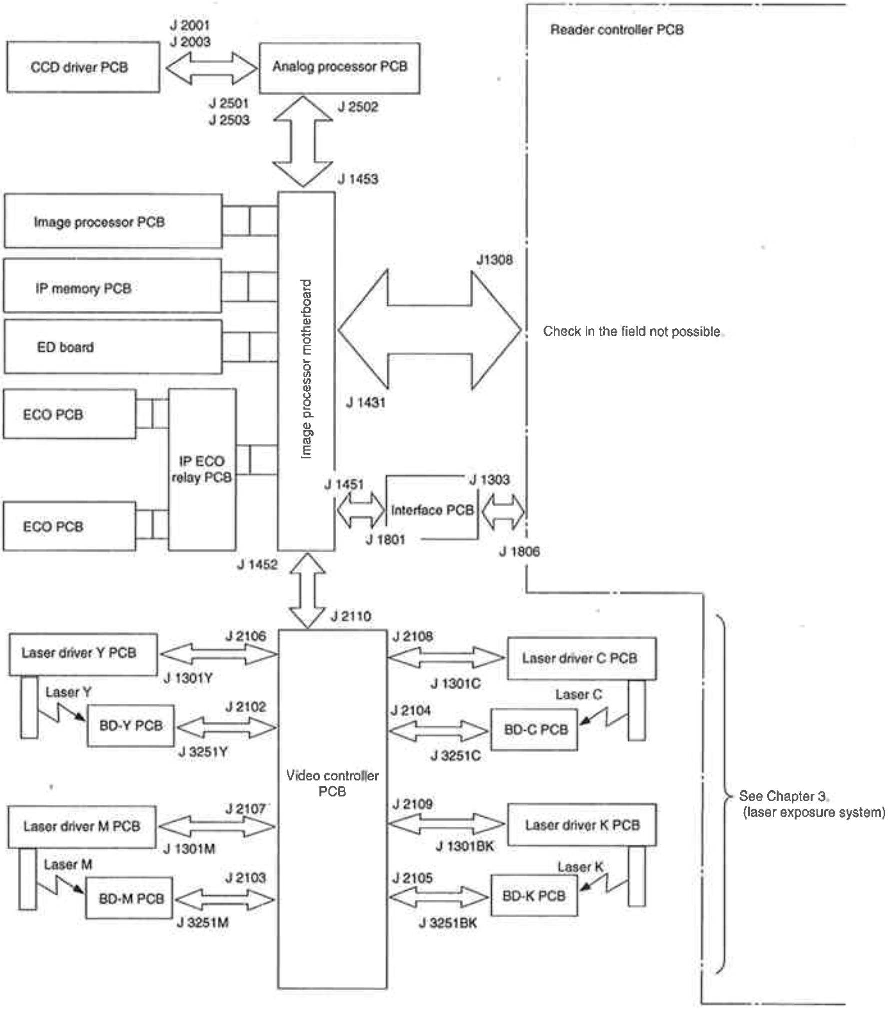

Reader controller PCB
CCD driver PCB
J 2001
J 2003
Analog processor PCB
J 2501
J 2503
J 2502
J 1453
Image processor PCB
IP memory PCB
ED board
ECO PCB
IP ECO relay PCB
ECO PCB
Image processor motherboard
J1308
J 1431
Check in the field not possible
J 1451
J 1303
Interface PCB
J 1801
J 1806
J 1452
J 2110
Laser driver Y PCB
J 2106
J 1301Y
Laser Y
BD-Y PCB
J 2102
J 3251Y
Laser driver M PCB
J 2107
J 1301M
Laser M
BD-M PCB
J 2103
J 3251M
Video controller PCB
J 2108
Laser driver C PCB
J 1301C
Laser C
J 2104
BD-C PCB
J 3251C
J 2109
Laser driver K PCB
J 1301BK
Laser K
J 2105
BD-K PCB
J 3251BK
See Chapter 3.
(laser exposure system)

Figure 3-103

Inputs to and Outputs from the Reader Controller PCB (2/3)

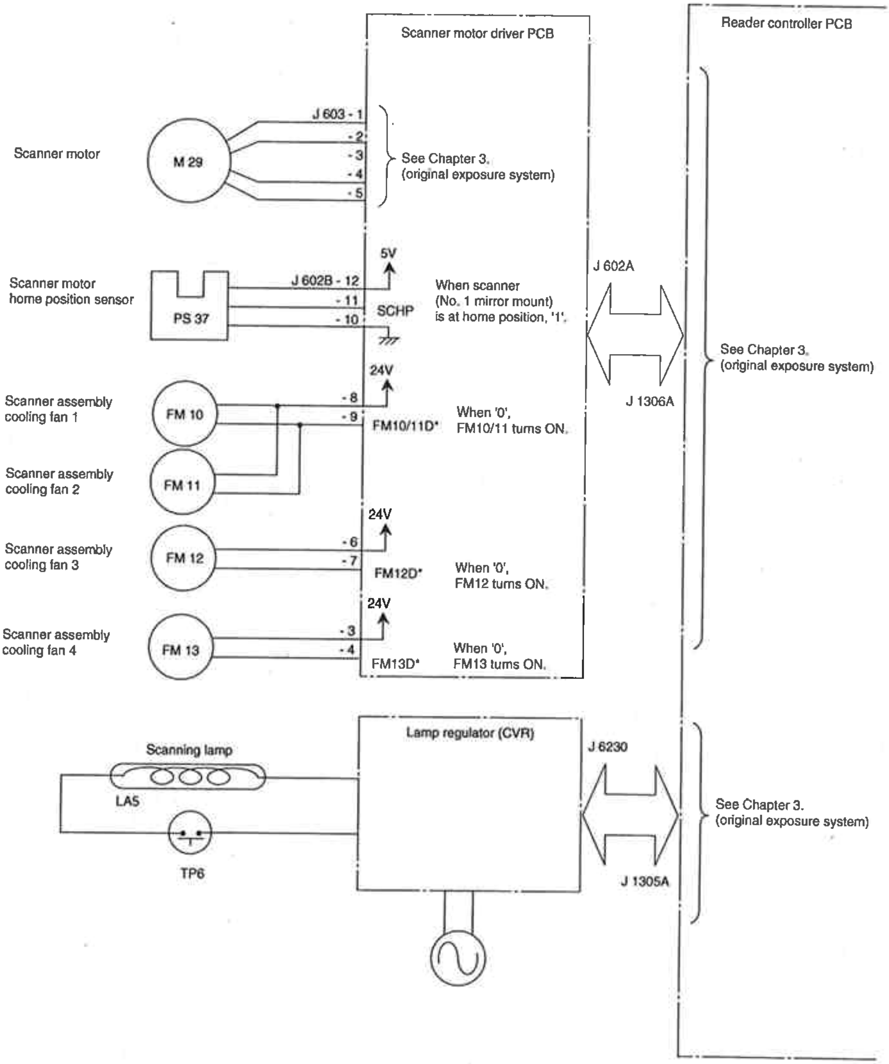

Scanner motor driver PCB
Reader controller PCB
Scanner motor
M 29
J 603 - 1
-2
-3
-4
-5
See Chapter 3.
(original exposure system)
Scanner motor
home position sensor
PS 37
J 602B - 12
- 11
- 10
5V
SCHP
When scanner
(No. 1 mirror mount)
is at home position, '1'.
J 602A
J 1306A
See Chapter 3.
(original exposure system)
Scanner assembly
cooling fan 1
FM 10
Scanner assembly
cooling fan 2
FM 11
24V
- 8
- 9
FM10/11D*
When '0',
FM10/11 turns ON.
Scanner assembly
cooling fan 3
FM 12
24V
- 6
- 7
FM12D*
When '0',
FM12 turns ON.
Scanner assembly
cooling fan 4
FM 13
24V
- 3
- 4
FM13D*
When '0',
FM13 turns ON.
Lamp regulator (CVR)
Scanning lamp
LA5
TP6
J 6230
J 1305A
See Chapter 3.
(original exposure system)

Figure 3-104

Inputs to and Outputs from the Reader Controller PCB (3/3)

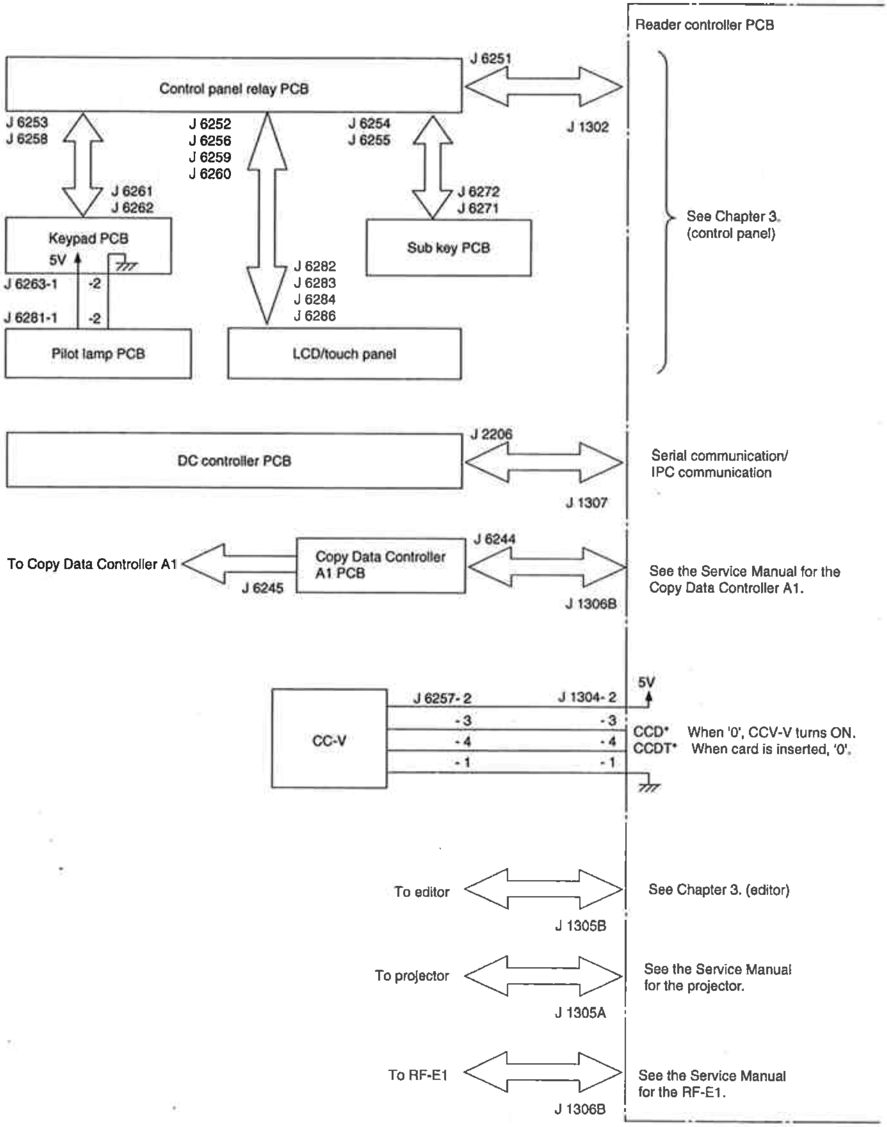

Reader controller PCB
Control panel relay PCB
J 6251
J 1302
J 6253
J 6258
J 6252
J 6256
J 6259
J 6260
J 6254
J 6255
J 6261
J 6262
J 6272
J 6271
See Chapter 3.
(control panel)
Keypad PCB
5V
Sub key PCB
J 6263-1
-2
J 6281-1
-2
J 6282
J 6283
J 6284
J 6286
Pilot lamp PCB
LCD/touch panel
J 2206
DC controller PCB
Serial communication/
IPC communication
J 1307
J 6244
To Copy Data Controller A1
Copy Data Controller
A1 PCB
J 6245
See the Service Manual for the
Copy Data Controller A1.
J 1306B
5V
J 6257-2
J 1304-2
-3
-3
CC-V
-4
-4
-1
-1
CCD*
CCDT*
When '0', CCV-V turns ON.
When card is inserted, '0'.
To editor
See Chapter 3. (editor)
J 1305B
To projector
See the Service Manual
for the projector.
J 1305A
To RF-E1
See the Service Manual
for the RF-E1.
J 1306B

Figure 3-105

Inputs to the DC Controller (1/8)

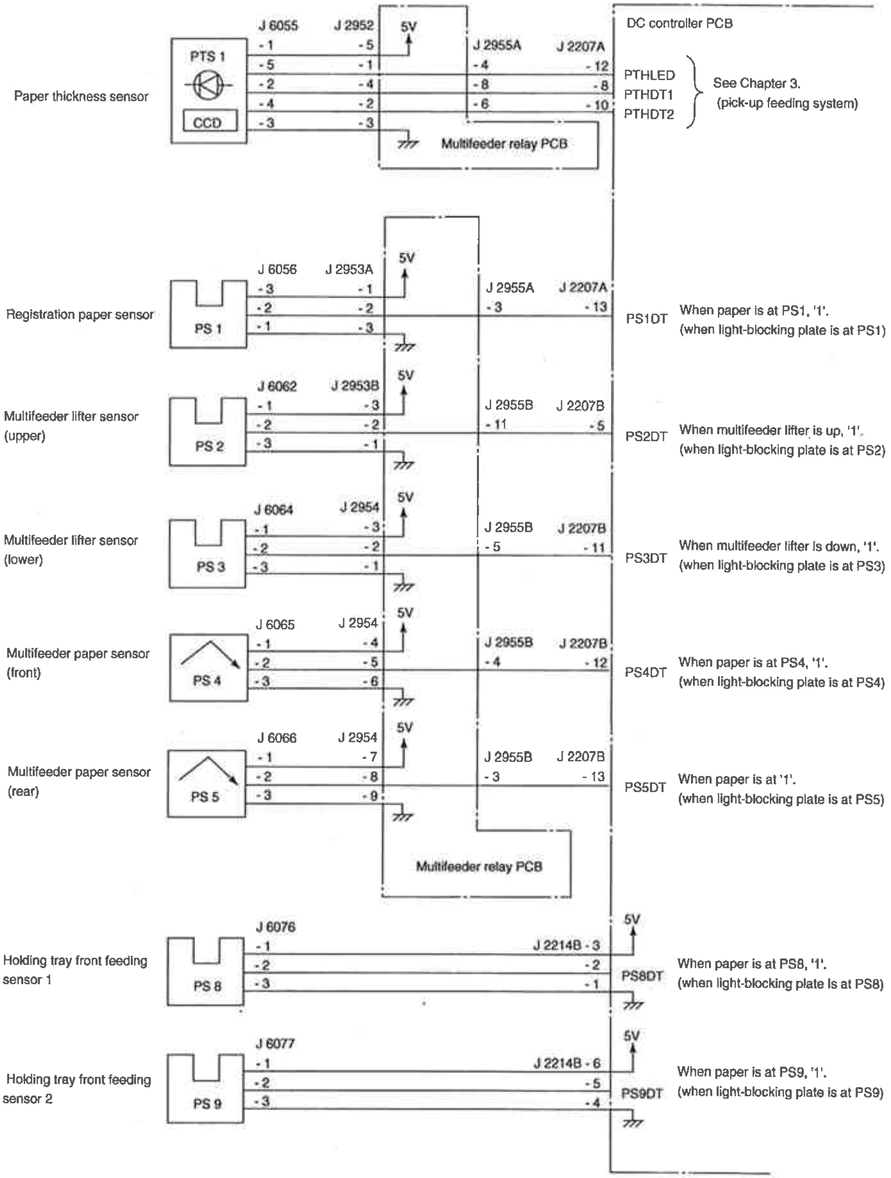
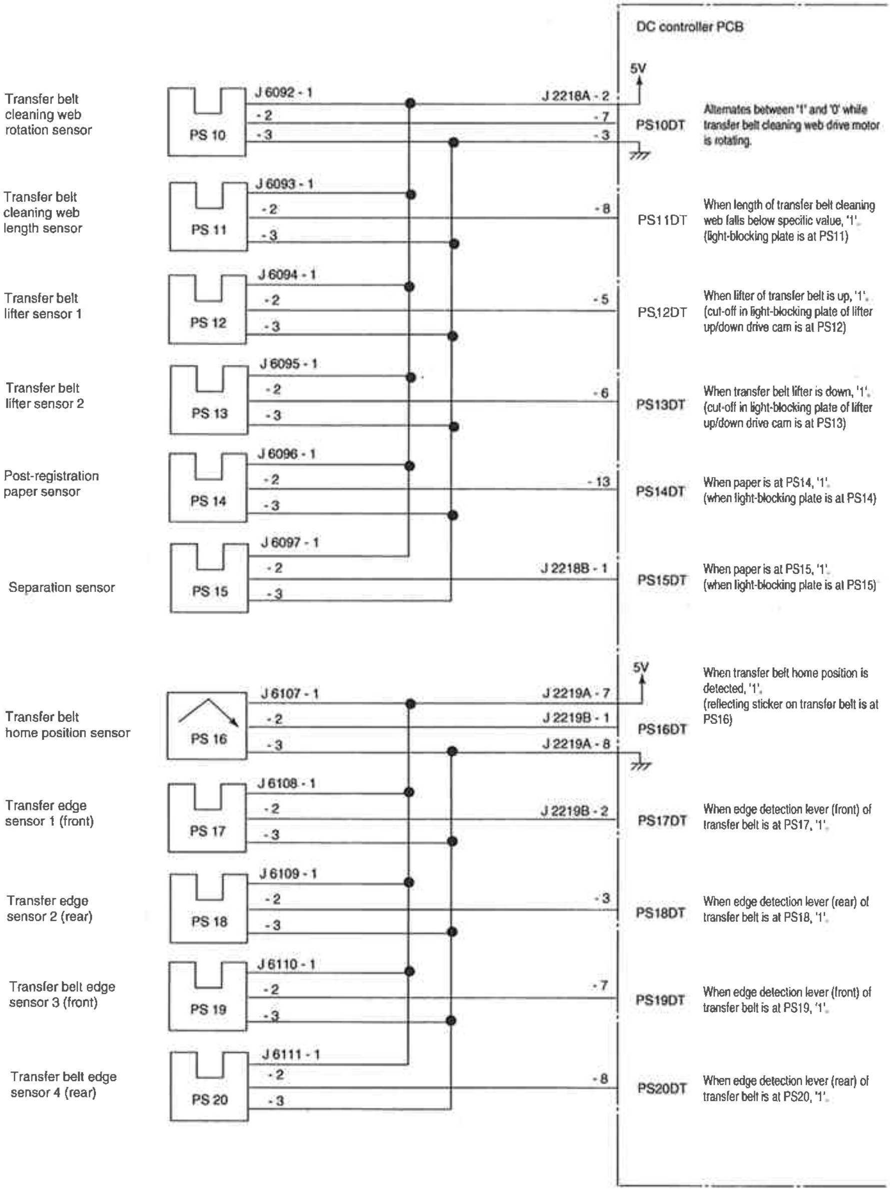

Paper thickness sensor
PTS 1
CCD
J 6055
J 2952
5V
J 2955A
J 2207A
Multifeeder relay PCB
DC controller PCB
PTHLED
PTHDT1
PTHDT2
See Chapter 3.
(pick-up feeding system)
Registration paper sensor
PS 1
J 6056
J 2953A
PS1DT
When paper is at PS1, '1'.
(when light-blocking plate is at PS1)
Multifeeder lifter sensor (upper)
PS 2
J 6062
J 2953B
J 2955B
J 2207B
PS2DT
When multifeeder lifter is up, '1'.
(when light-blocking plate is at PS2)
Multifeeder lifter sensor (lower)
PS 3
J 6064
J 2954
PS3DT
When multifeeder lifter is down, '1'.
(when light-blocking plate is at PS3)
Multifeeder paper sensor (front)
PS 4
J 6065
PS4DT
When paper is at PS4, '1'.
(when light-blocking plate is at PS4)
Multifeeder paper sensor (rear)
PS 5
J 6066
PS5DT
When paper is at '1'.
(when light-blocking plate is at PS5)
Holding tray front feeding sensor 1
PS 8
J 6076
J 2214B
PS8DT
When paper is at PS8, '1'.
(when light-blocking plate is at PS8)
Holding tray front feeding sensor 2
PS 9
J 6077
PS9DT
When paper is at PS9, '1'.
(when light-blocking plate is at PS9)

Figure 3-106

Inputs to the DC Controller PCB (2/8)


DC controller PCB
5V
Transfer belt cleaning web rotation sensor
PS 10
J 6092 - 1
-2
-3
J 2218A - 2
-7
-3
PS10DT
Transfer belt cleaning web length sensor
PS 11
J 6093 - 1
-2
-3
-8
PS11DT
Transfer belt lifter sensor 1
PS 12
J 6094 - 1
-2
-3
-5
PS12DT
Transfer belt lifter sensor 2
PS 13
J 6095 - 1
-2
-3
-6
PS13DT
Post-registration paper sensor
PS 14
J 6096 - 1
-2
-3
-13
PS14DT
Separation sensor
PS 15
J 6097 - 1
-2
-3
J 2218B - 1
PS15DT
5V
Transfer belt home position sensor
PS 16
J 6107 - 1
-2
-3
J 2219A - 7
J 2219B - 1
J 2219A - 8
PS16DT
Transfer edge sensor 1 (front)
PS 17
J 6108 - 1
-2
-3
J 2219B - 2
PS17DT
Transfer edge sensor 2 (rear)
PS 18
J 6109 - 1
-2
-3
-3
PS18DT
Transfer belt edge sensor 3 (front)
PS 19
J 6110 - 1
-2
-3
-7
PS19DT
Transfer belt edge sensor 4 (rear)
PS 20
J 6111 - 1
-2
-3
-8
PS20DT

Alternates between '1' and '0' while transfer belt cleaning web drive motor is rotating.

When length of transfer belt cleaning web falls below specific value, '1'. (light-blocking plate is at PS11)

When lifter of transfer belt is up, '1'. (cut-off in light-blocking plate of lifter up/down drive cam is at PS12)

When transfer belt lifter is down, '1'. (cut-off in light-blocking plate of lifter up/down drive cam is at PS13)

When paper is at PS14, '1'. (when light-blocking plate is at PS14)

When paper is at PS15, '1'. (when light-blocking plate is at PS15)

When transfer belt home position is detected, '1'. (reflecting sticker on transfer belt is at PS16)

When edge detection lever (front) of transfer belt is at PS17, '1'.

When edge detection lever (rear) of transfer belt is at PS18, '1'.

When edge detection lever (front) of transfer belt is at PS19, '1'.

When edge detection lever (rear) of transfer belt is at PS20, '1'.

Figure 3-107

Inputs to the DC Controller PCB (3/8)

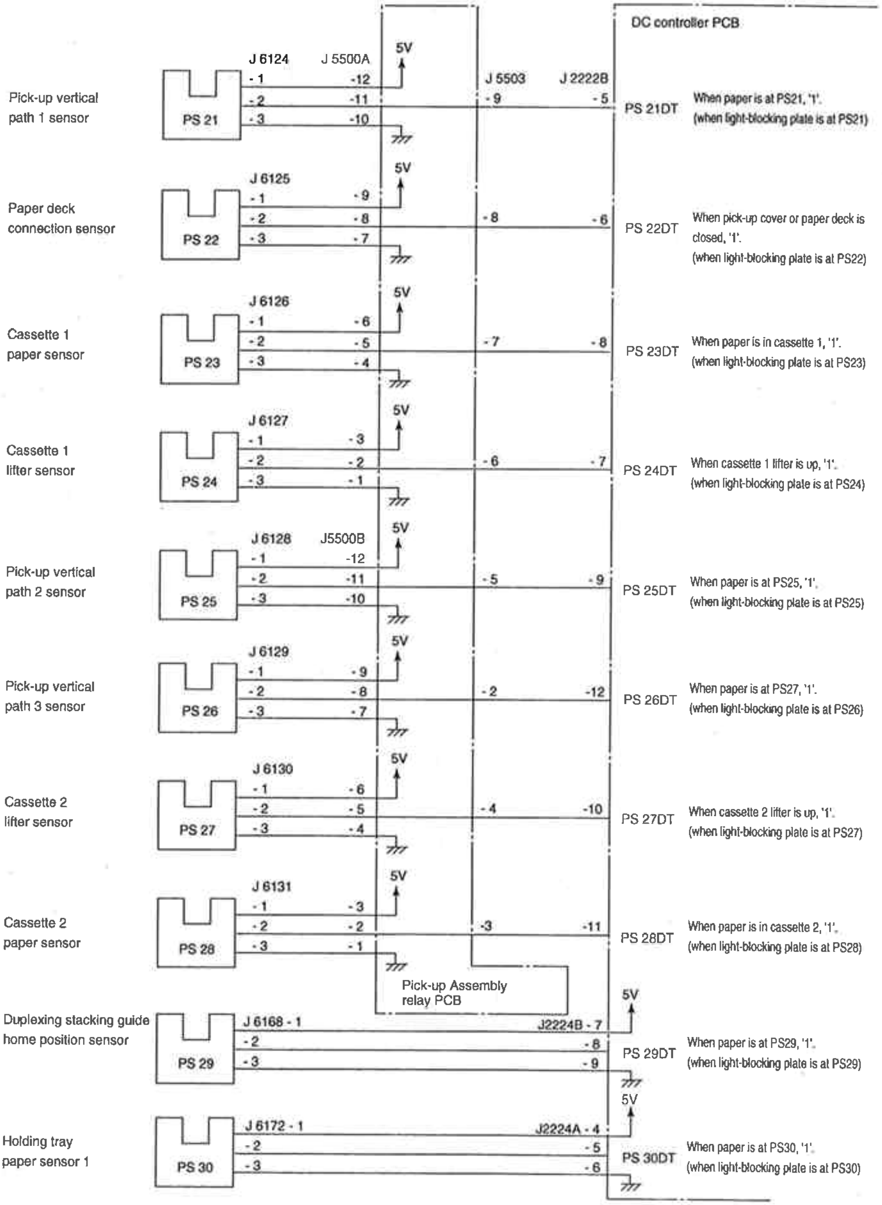

DC controller PCB
Pick-up vertical path 1 sensor
PS 21
J 6124
J 5500A
5V
-1 -12
-2 -11
-3 -10
J 5503
J 2222B
-9
-5
PS 21DT
When paper is at PS21, '1'.
(when light-blocking plate is at PS21)
Paper deck connection sensor
PS 22
J 6125
-1 -9
-2 -8
-3 -7
-8
-6
PS 22DT
When pick-up cover or paper deck is closed, '1'.
(when light-blocking plate is at PS22)
Cassette 1 paper sensor
PS 23
J 6126
-1 -6
-2 -5
-3 -4
-7
-8
PS 23DT
When paper is in cassette 1, '1'.
(when light-blocking plate is at PS23)
Cassette 1 lifter sensor
PS 24
J 6127
-1 -3
-2 -2
-3 -1
-6
-7
PS 24DT
When cassette 1 lifter is up, '1'.
(when light-blocking plate is at PS24)
Pick-up vertical path 2 sensor
PS 25
J 6128
J5500B
-1 -12
-2 -11
-3 -10
-5
-9
PS 25DT
When paper is at PS25, '1'.
(when light-blocking plate is at PS25)
Pick-up vertical path 3 sensor
PS 26
J 6129
-1 -9
-2 -8
-3 -7
-2
-12
PS 26DT
When paper is at PS27, '1'.
(when light-blocking plate is at PS26)
Cassette 2 lifter sensor
PS 27
J 6130
-1 -6
-2 -5
-3 -4
-4
-10
PS 27DT
When cassette 2 lifter is up, '1'.
(when light-blocking plate is at PS27)
Cassette 2 paper sensor
PS 28
J 6131
-1 -3
-2 -2
-3 -1
-3
-11
PS 28DT
When paper is in cassette 2, '1'.
(when light-blocking plate is at PS28)
Pick-up Assembly relay PCB
Duplexing stacking guide home position sensor
PS 29
J 6168 - 1
-2
-3
J2224B - 7
-8
-9
5V
PS 29DT
When paper is at PS29, '1'.
(when light-blocking plate is at PS29)
Holding tray paper sensor 1
PS 30
J 6172 - 1
-2
-3
J2224A - 4
-5
-6
5V
PS 30DT
When paper is at PS30, '1'.
(when light-blocking plate is at PS30)

Figure 3-108

Inputs to the DC Controller PCB (4/8)

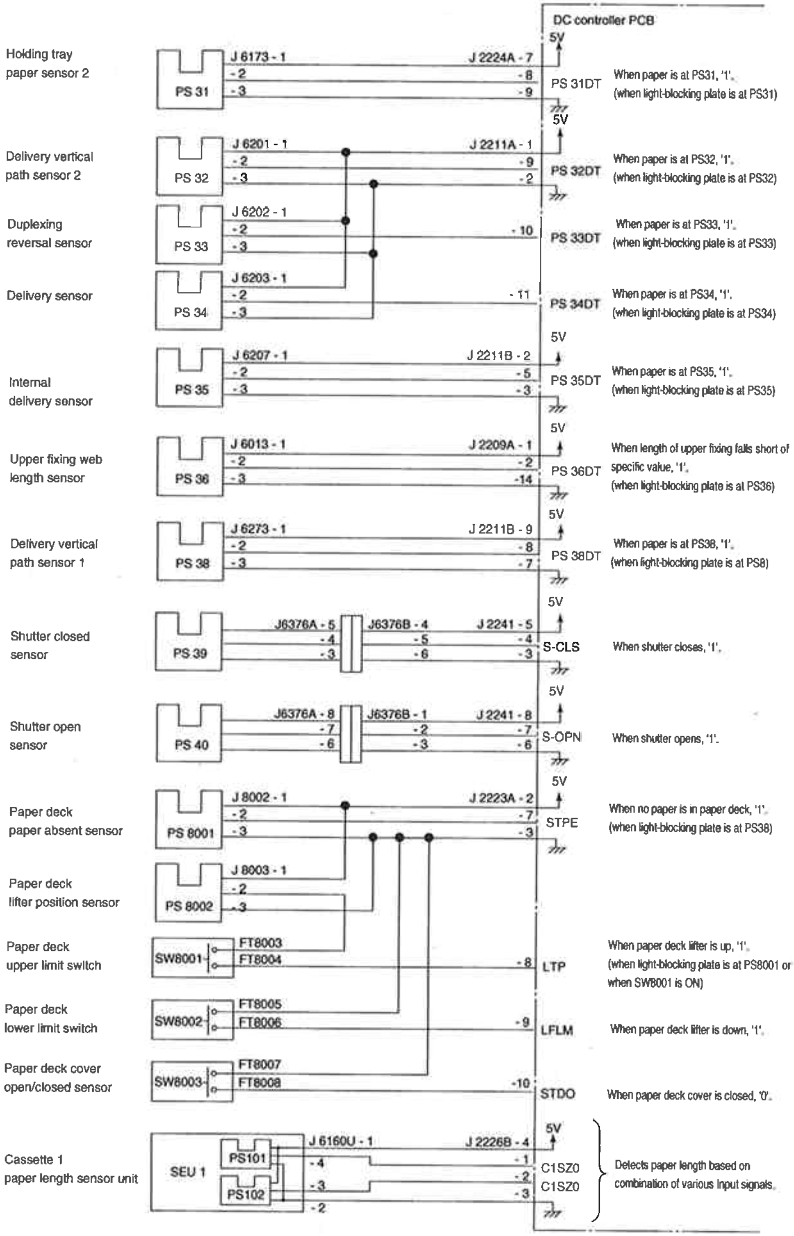
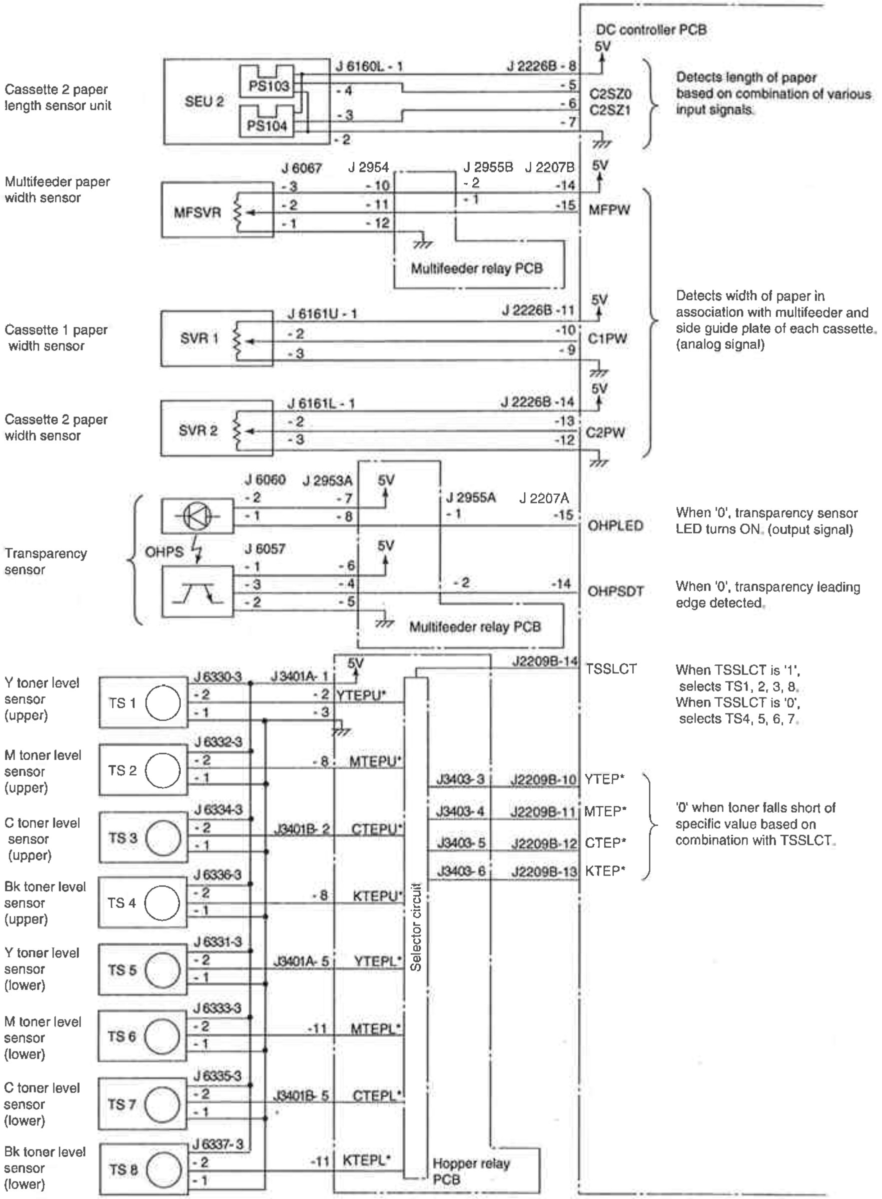

DC controller PCB
Holding tray paper sensor 2
PS 31
J 6173 - 1
-2
-3
J 2224A - 7
-8
-9
5V
PS 31DT
When paper is at PS31, '1'. (when light-blocking plate is at PS31)
Delivery vertical path sensor 2
PS 32
J 6201 - 1
-2
-3
J 2211A - 1
-9
-2
PS 32DT
When paper is at PS32, '1'. (when light-blocking plate is at PS32)
Duplexing reversal sensor
PS 33
J 6202 - 1
-2
-3
-10
PS 33DT
When paper is at PS33, '1'. (when light-blocking plate is at PS33)
Delivery sensor
PS 34
J 6203 - 1
-2
-3
-11
PS 34DT
When paper is at PS34, '1'. (when light-blocking plate is at PS34)
Internal delivery sensor
PS 35
J 6207 - 1
-2
-3
J 2211B - 2
-5
-3
PS 35DT
When paper is at PS35, '1'. (when light-blocking plate is at PS35)
Upper fixing web length sensor
PS 36
J 6013 - 1
-2
-3
J 2209A - 1
-2
-14
PS 36DT
When length of upper fixing falls short of specific value, '1'. (when light-blocking plate is at PS36)
Delivery vertical path sensor 1
PS 38
J 6273 - 1
-2
-3
J 2211B - 9
-8
-7
PS 38DT
When paper is at PS38, '1'. (when light-blocking plate is at PS8)
Shutter closed sensor
PS 39
J6376A - 5
-4
-3
J6376B - 4
-5
-6
J 2241 - 5
-4
-3
S-CLS
When shutter closes, '1'.
Shutter open sensor
PS 40
J6376A - 8
-7
-6
J6376B - 1
-2
-3
J 2241 - 8
-7
-6
S-OPN
When shutter opens, '1'.
Paper deck paper absent sensor
PS 8001
J 8002 - 1
-2
-3
J 2223A - 2
-7
-3
STPE
When no paper is in paper deck, '1'. (when light-blocking plate is at PS38)
Paper deck lifter position sensor
PS 8002
J 8003 - 1
-2
-3
Paper deck upper limit switch
SW8001
FT8003
FT8004
-8
LTP
When paper deck lifter is up, '1'. (when light-blocking plate is at PS8001 or when SW8001 is ON)
Paper deck lower limit switch
SW8002
FT8005
FT8006
-9
LFLM
When paper deck lifter is down, '1'.
Paper deck cover open/closed sensor
SW8003
FT8007
FT8008
-10
STDO
When paper deck cover is closed, '0'.
Cassette 1 paper length sensor unit
SEU 1
PS101
PS102
J 6160U - 1
-4
-3
-2
J 2226B - 4
-1
-2
-3
C1SZ0
C1SZ0
Detects paper length based on combination of various input signals.
5V

Figure 3-109

Inputs to the DC Controller PCB (5/8)


DC controller PCB
5V
Cassette 2 paper length sensor unit
SEU 2
PS103
PS104
J 6160L - 1
-4
-3
-2
J 2226B - 8
-5
-6
-7
C2SZ0
C2SZ1
Multifeeder paper width sensor
MFSVR
J 6067
-3
-2
-1
J 2954
-10
-11
-12
J 2955B
-2
-1
J 2207B
-14
-15
MFPW
Multifeeder relay PCB
Cassette 1 paper width sensor
SVR 1
J 6161U - 1
-2
-3
J 2226B -11
-10
-9
C1PW
Cassette 2 paper width sensor
SVR 2
J 6161L - 1
-2
-3
J 2226B -14
-13
-12
C2PW
Transparency sensor
OHPS
J 6060
-2
-1
J 2953A
-7
-8
J 6057
-1
-3
-2
-6
-4
-5
J 2955A
-1
-2
J 2207A
-15
-14
OHPLED
OHPSDT
Multifeeder relay PCB
Y toner level sensor (upper)
TS 1
J 6330-3
-2
-1
J 3401A- 1
-2
-3
YTEPU*
J2209B-14
TSSLCT
M toner level sensor (upper)
TS 2
J 6332-3
-2
-1
-8
MTEPU*
J3403-3
J2209B-10
YTEP*
C toner level sensor (upper)
TS 3
J 6334-3
-2
-1
J3401B- 2
CTEPU*
J3403-4
J2209B-11
MTEP*
J3403-5
J2209B-12
CTEP*
J3403-6
J2209B-13
KTEP*
Bk toner level sensor (upper)
TS 4
J 6336-3
-2
-1
-8
KTEPU*
Selector circuit
Y toner level sensor (lower)
TS 5
J 6331-3
-2
-1
J3401A- 5
YTEPL*
M toner level sensor (lower)
TS 6
J 6333-3
-2
-1
-11
MTEPL*
C toner level sensor (lower)
TS 7
J 6335-3
-2
-1
J3401B- 5
CTEPL*
Bk toner level sensor (lower)
TS 8
J 6337-3
-2
-1
-11
KTEPL*
Hopper relay PCB

Detects length of paper based on combination of various input signals.

Detects width of paper in association with multifeeder and side guide plate of each cassette. (analog signal)

When '0', transparency sensor LED turns ON. (output signal)

When '0', transparency leading edge detected.

When TSSLCT is '1', selects TS1, 2, 3, 8.
When TSSLCT is '0', selects TS4, 5, 6, 7.

'0' when toner falls short of specific value based on combination with TSSLCT.

Figure 3-110

Inputs to the DC Controller PCB (6/8)

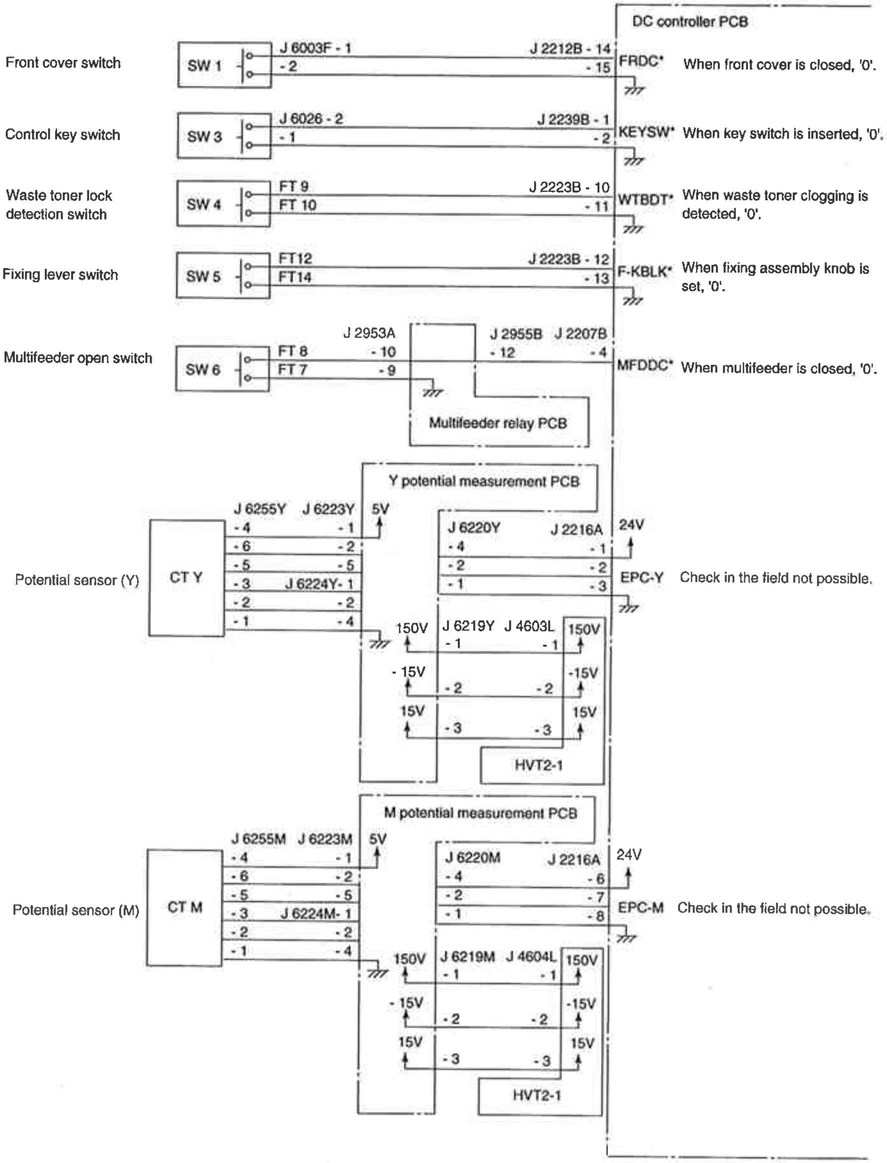

DC controller PCB
Front cover switch
SW 1
J 6003F - 1
- 2
J 2212B - 14
- 15
FRDC*
When front cover is closed, '0'.
Control key switch
SW 3
J 6026 - 2
- 1
J 2239B - 1
- 2
KEYSW*
When key switch is inserted, '0'.
Waste toner lock detection switch
SW 4
FT 9
FT 10
J 2223B - 10
- 11
WTBDT*
When waste toner clogging is detected, '0'.
Fixing lever switch
SW 5
FT12
FT14
J 2223B - 12
- 13
F-KBLK*
When fixing assembly knob is set, '0'.
Multifeeder open switch
SW 6
FT 8
FT 7
J 2953A
- 10
- 9
J 2955B
- 12
J 2207B
- 4
MFDDC*
When multifeeder is closed, '0'.
Multifeeder relay PCB
Y potential measurement PCB
Potential sensor (Y)
CT Y
J 6255Y
J 6223Y
5V
J 6224Y- 1
J 6220Y
J 2216A
24V
EPC-Y
Check in the field not possible.
150V
J 6219Y
J 4603L
150V
- 15V
-15V
15V
15V
HVT2-1
M potential measurement PCB
Potential sensor (M)
CT M
J 6255M
J 6223M
5V
J 6224M- 1
J 6220M
J 2216A
24V
EPC-M
Check in the field not possible.
150V
J 6219M
J 4604L
150V
- 15V
-15V
15V
15V
HVT2-1

Figure 3-111

Inputs to the DC Controller PCB (7/8)

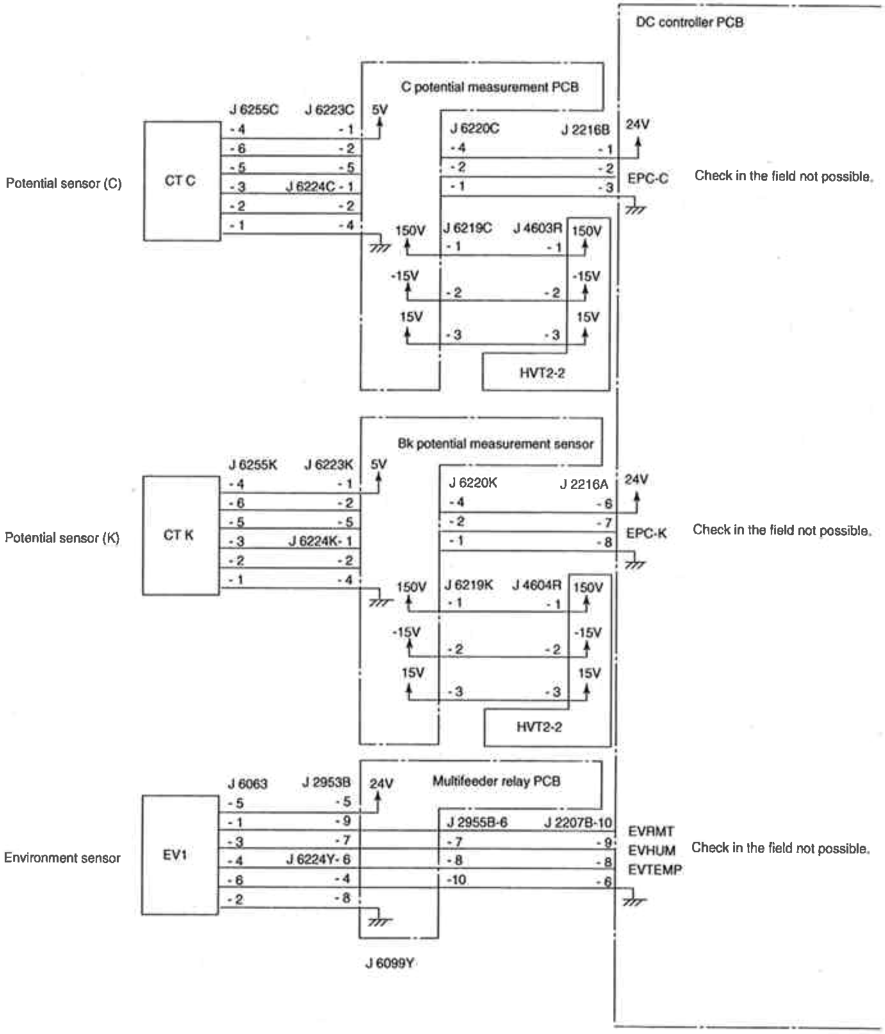

DC controller PCB
C potential measurement PCB
Potential sensor (C)
CT C
J 6255C
J 6223C
5V
J 6224C - 1
J 6220C
J 2216B
24V
EPC-C
Check in the field not possible.
150V
J 6219C
J 4603R
-15V
15V
HVT2-2
Bk potential measurement sensor
Potential sensor (K)
CT K
J 6255K
J 6223K
J 6224K- 1
J 6220K
J 2216A
EPC-K
Check in the field not possible.
J 6219K
J 4604R
HVT2-2
Multifeeder relay PCB
Environment sensor
EV1
J 6063
J 2953B
24V
J 6224Y- 6
J 2955B-6
J 2207B-10
EVRMT
EVHUM
EVTEMP
Check in the field not possible.
J 6099Y

Figure 3-112

Inputs to the DC Controller PCB (8/8)

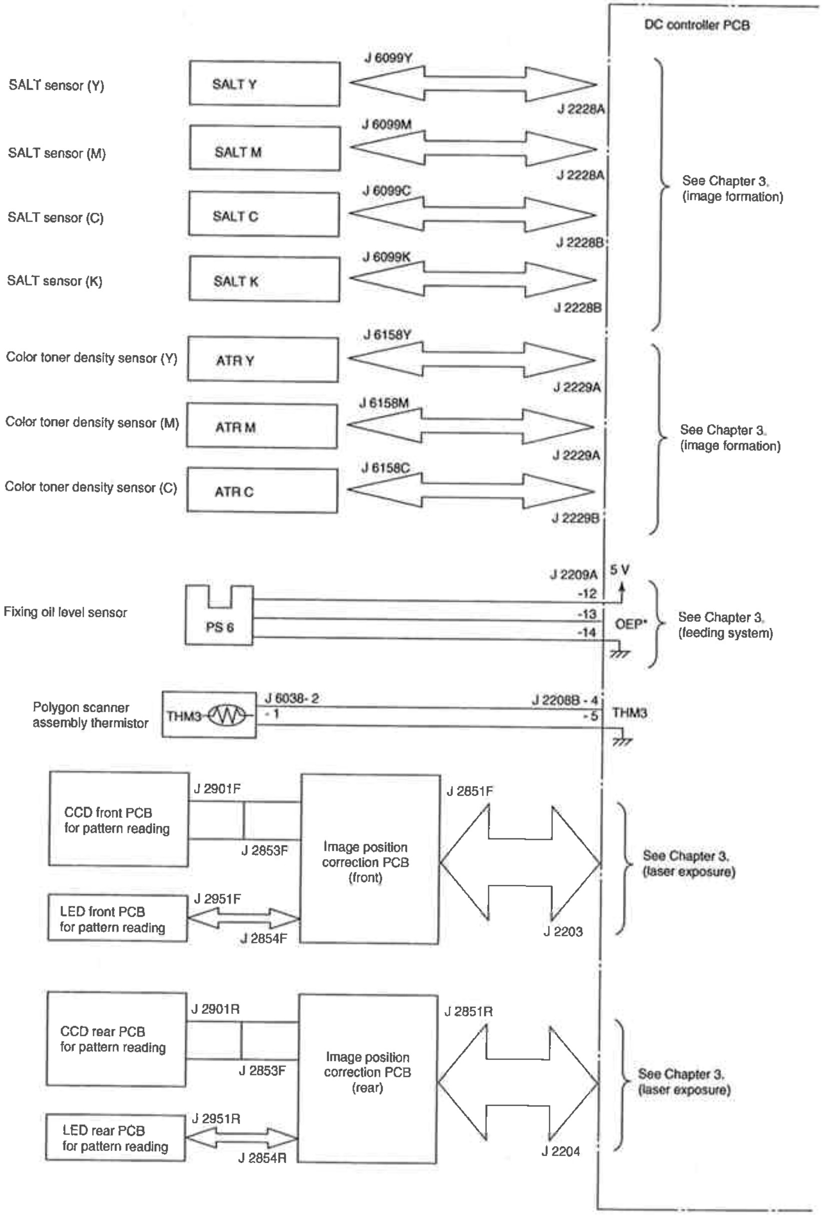

DC controller PCB
SALT sensor (Y)
SALT Y
J 6099Y
J 2228A
SALT sensor (M)
SALT M
J 6099M
J 2228A
SALT sensor (C)
SALT C
J 6099C
J 2228B
SALT sensor (K)
SALT K
J 6099K
J 2228B
See Chapter 3.
(image formation)
Color toner density sensor (Y)
ATR Y
J 6158Y
J 2229A
Color toner density sensor (M)
ATR M
J 6158M
J 2229A
Color toner density sensor (C)
ATR C
J 6158C
J 2229B
See Chapter 3.
(image formation)
Fixing oil level sensor
PS 6
J 2209A
-12
-13
-14
5 V
OEP*
See Chapter 3.
(feeding system)
Polygon scanner
assembly thermistor
THM3
J 6038- 2
- 1
J 2208B - 4
-5
THM3
CCD front PCB
for pattern reading
J 2901F
J 2853F
LED front PCB
for pattern reading
J 2951F
J 2854F
Image position
correction PCB
(front)
J 2851F
J 2203
See Chapter 3.
(laser exposure)
CCD rear PCB
for pattern reading
J 2901R
J 2853F
LED rear PCB
for pattern reading
J 2951R
J 2854R
Image position
correction PCB
(rear)
J 2851R
J 2204
See Chapter 3.
(laser exposure)

Figure 3-113

Outputs from the DC Controller PCB (1/12)

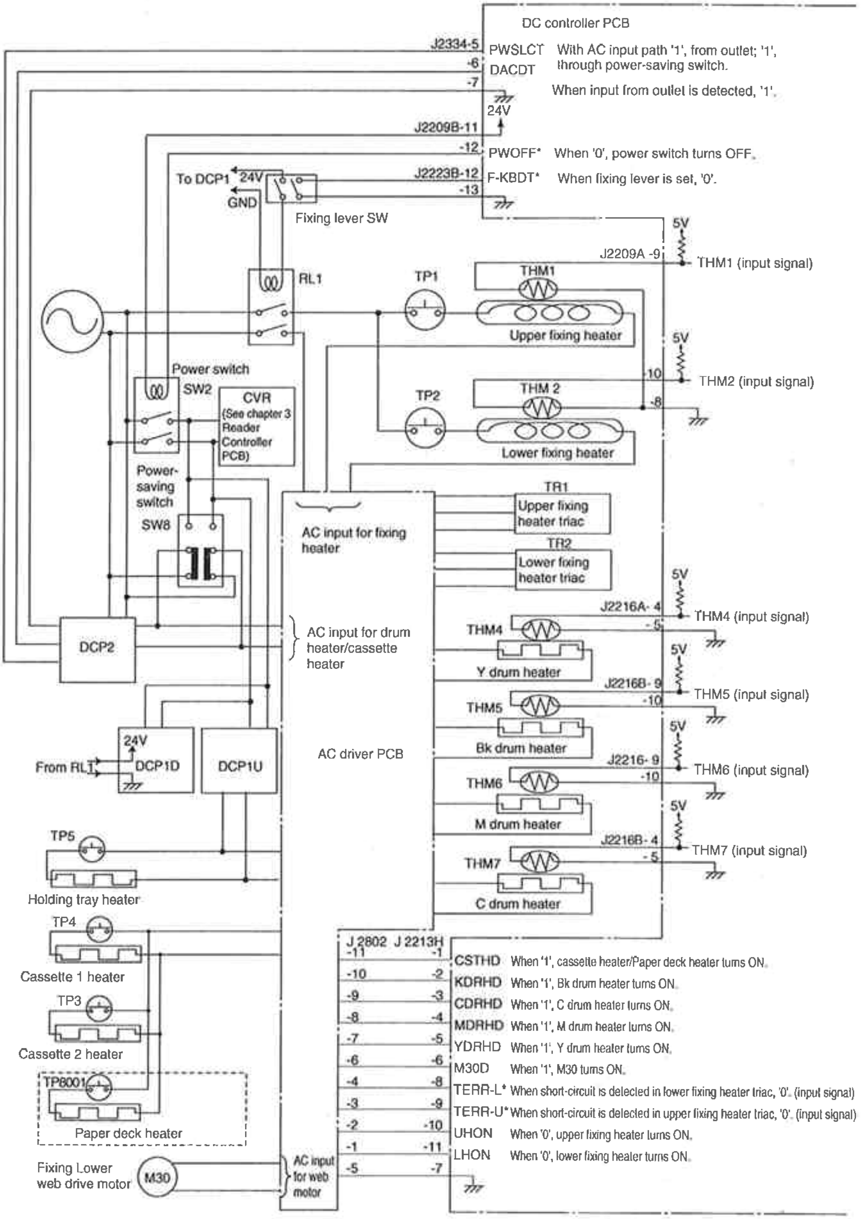

DC controller PCB
J2334-5
-6
-7
PWSLCT
DACDT
With AC input path '1', from outlet; '1', through power-saving switch.
When input from outlet is detected, '1'.
24V
J2209B-11
-12
PWOFF*
When '0', power switch turns OFF.
J2223B-12
-13
F-KBDT*
When fixing lever is set, '0'.
To DCP1
24V
GND
Fixing lever SW
5V
J2209A -9
THM1 (input signal)
RL1
TP1
THM1
Upper fixing heater
5V
-10
THM2 (input signal)
-8
Power switch
SW2
CVR
(See chapter 3 Reader Controller PCB)
TP2
THM 2
Lower fixing heater
Power-saving switch
SW8
TR1
Upper fixing heater triac
TR2
Lower fixing heater triac
AC input for fixing heater
5V
J2216A- 4
-5
THM4 (input signal)
THM4
DCP2
AC input for drum heater/cassette heater
Y drum heater
5V
J2216B- 9
-10
THM5 (input signal)
THM5
Bk drum heater
5V
J2216- 9
-10
THM6 (input signal)
24V
From RL1
DCP1D
DCP1U
AC driver PCB
THM6
M drum heater
5V
J2216B- 4
-5
THM7 (input signal)
THM7
C drum heater
TP5
Holding tray heater
TP4
Cassette 1 heater
TP3
Cassette 2 heater
TP6001
Paper deck heater
Fixing Lower web drive motor
M30
AC input for web motor
J 2802 J 2213H
-11 -1
-10 -2
-9 -3
-8 -4
-7 -5
-6 -6
-4 -8
-3 -9
-2 -10
-1 -11
-5 -7
CSTHD When '1', cassette heater/Paper deck heater turns ON.
KDRHD When '1', Bk drum heater turns ON.
CDRHD When '1', C drum heater turns ON.
MDRHD When '1', M drum heater turns ON.
YDRHD When '1', Y drum heater turns ON.
M30D When '1', M30 turns ON.
TERR-L* When short-circuit is detected in lower fixing heater triac, '0'. (input signal)
TERR-U* When short-circuit is detected in upper fixing heater triac, '0'. (input signal)
UHON When '0', upper fixing heater turns ON.
LHON When '0', lower fixing heater turns ON.

Figure 3-114

Outputs from the DC Controller PCB (2/12)

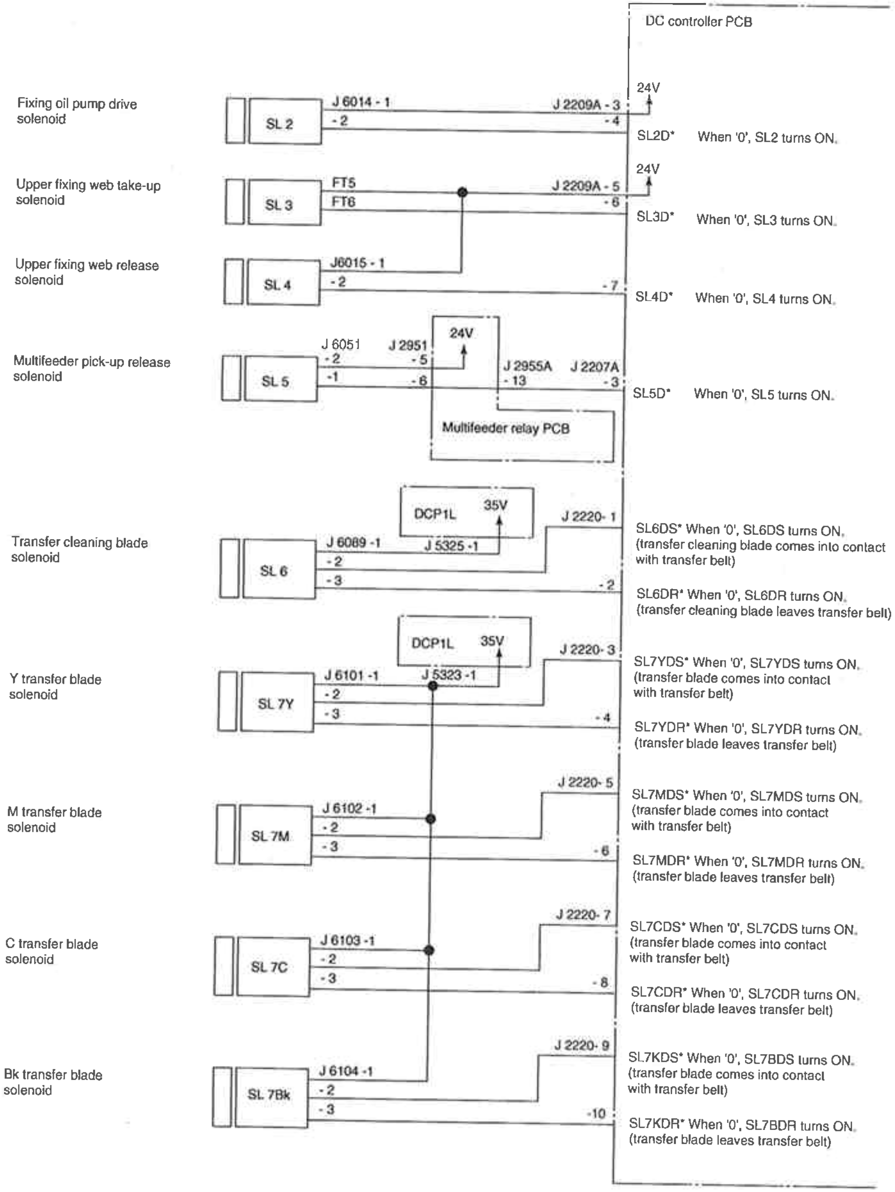

DC controller PCB
Fixing oil pump drive solenoid
SL 2
J 6014 - 1
-2
J 2209A - 3
-4
24V
SL2D*
When '0', SL2 turns ON.
Upper fixing web take-up solenoid
SL 3
FT5
FT6
J 2209A - 5
-6
24V
SL3D*
When '0', SL3 turns ON.
Upper fixing web release solenoid
SL 4
J6015 - 1
-2
-7
SL4D*
When '0', SL4 turns ON.
Multifeeder pick-up release solenoid
SL 5
J 6051
-2
-1
J 2951
-5
-6
24V
J 2955A
-13
J 2207A
-3
SL5D*
When '0', SL5 turns ON.
Multifeeder relay PCB
DCP1L
35V
Transfer cleaning blade solenoid
SL 6
J 6089 -1
-2
-3
J 5325 -1
J 2220- 1
-2
SL6DS* When '0', SL6DS turns ON. (transfer cleaning blade comes into contact with transfer belt)
SL6DR* When '0', SL6DR turns ON. (transfer cleaning blade leaves transfer belt)
DCP1L
35V
Y transfer blade solenoid
SL 7Y
J 6101 -1
-2
-3
J 5323 -1
J 2220- 3
-4
SL7YDS* When '0', SL7YDS turns ON. (transfer blade comes into contact with transfer belt)
SL7YDR* When '0', SL7YDR turns ON. (transfer blade leaves transfer belt)
M transfer blade solenoid
SL 7M
J 6102 -1
-2
-3
J 2220- 5
-6
SL7MDS* When '0', SL7MDS turns ON. (transfer blade comes into contact with transfer belt)
SL7MDR* When '0', SL7MDR turns ON. (transfer blade leaves transfer belt)
C transfer blade solenoid
SL 7C
J 6103 -1
-2
-3
J 2220- 7
-8
SL7CDS* When '0', SL7CDS turns ON. (transfer blade comes into contact with transfer belt)
SL7CDR* When '0', SL7CDR turns ON. (transfer blade leaves transfer belt)
Bk transfer blade solenoid
SL 7Bk
J 6104 -1
-2
-3
J 2220- 9
-10
SL7KDS* When '0', SL7BDS turns ON. (transfer blade comes into contact with transfer belt)
SL7KDR* When '0', SL7BDR turns ON. (transfer blade leaves transfer belt)

Figure 3-115

Outputs from the DC Controller (3/12)

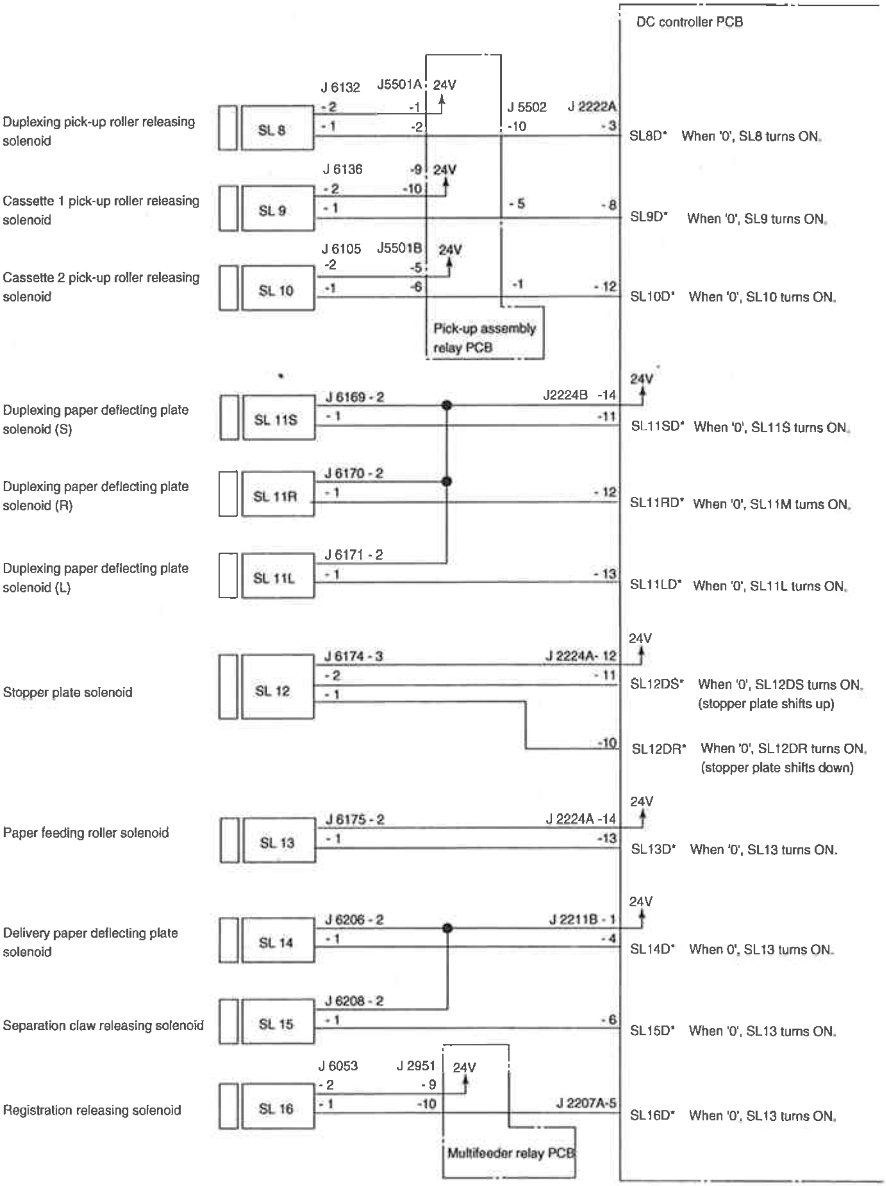

DC controller PCB
Duplexing pick-up roller releasing solenoid
SL 8
J 6132
J5501A
24V
-2
-1
-1
-2
J 5502
J 2222A
-10
-3
SL8D* When '0', SL8 turns ON.
Cassette 1 pick-up roller releasing solenoid
SL 9
J 6136
-9
-10
24V
-2
-1
-5
-8
SL9D* When '0', SL9 turns ON.
Cassette 2 pick-up roller releasing solenoid
SL 10
J 6105
J5501B
24V
-2
-1
-5
-6
-1
-12
SL10D* When '0', SL10 turns ON.
Pick-up assembly relay PCB
24V
Duplexing paper deflecting plate solenoid (S)
SL 11S
J 6169 - 2
- 1
J2224B -14
-11
SL11SD* When '0', SL11S turns ON.
Duplexing paper deflecting plate solenoid (R)
SL 11R
J 6170 - 2
- 1
- 12
SL11RD* When '0', SL11M turns ON.
Duplexing paper deflecting plate solenoid (L)
SL 11L
J 6171 - 2
- 1
- 13
SL11LD* When '0', SL11L turns ON.
24V
Stopper plate solenoid
SL 12
J 6174 - 3
- 2
- 1
J 2224A- 12
- 11
SL12DS* When '0', SL12DS turns ON. (stopper plate shifts up)
-10
SL12DR* When '0', SL12DR turns ON. (stopper plate shifts down)
24V
Paper feeding roller solenoid
SL 13
J 6175 - 2
- 1
J 2224A -14
-13
SL13D* When '0', SL13 turns ON.
24V
Delivery paper deflecting plate solenoid
SL 14
J 6206 - 2
- 1
J 2211B - 1
- 4
SL14D* When 0', SL13 turns ON.
Separation claw releasing solenoid
SL 15
J 6208 - 2
- 1
- 6
SL15D* When '0', SL13 turns ON.
Registration releasing solenoid
SL 16
J 6053
J 2951
24V
- 2
- 9
- 1
-10
J 2207A-5
SL16D* When '0', SL13 turns ON.
Multifeeder relay PCB

Figure 3-116

Outputs from the DC Controller PCB (4/12)

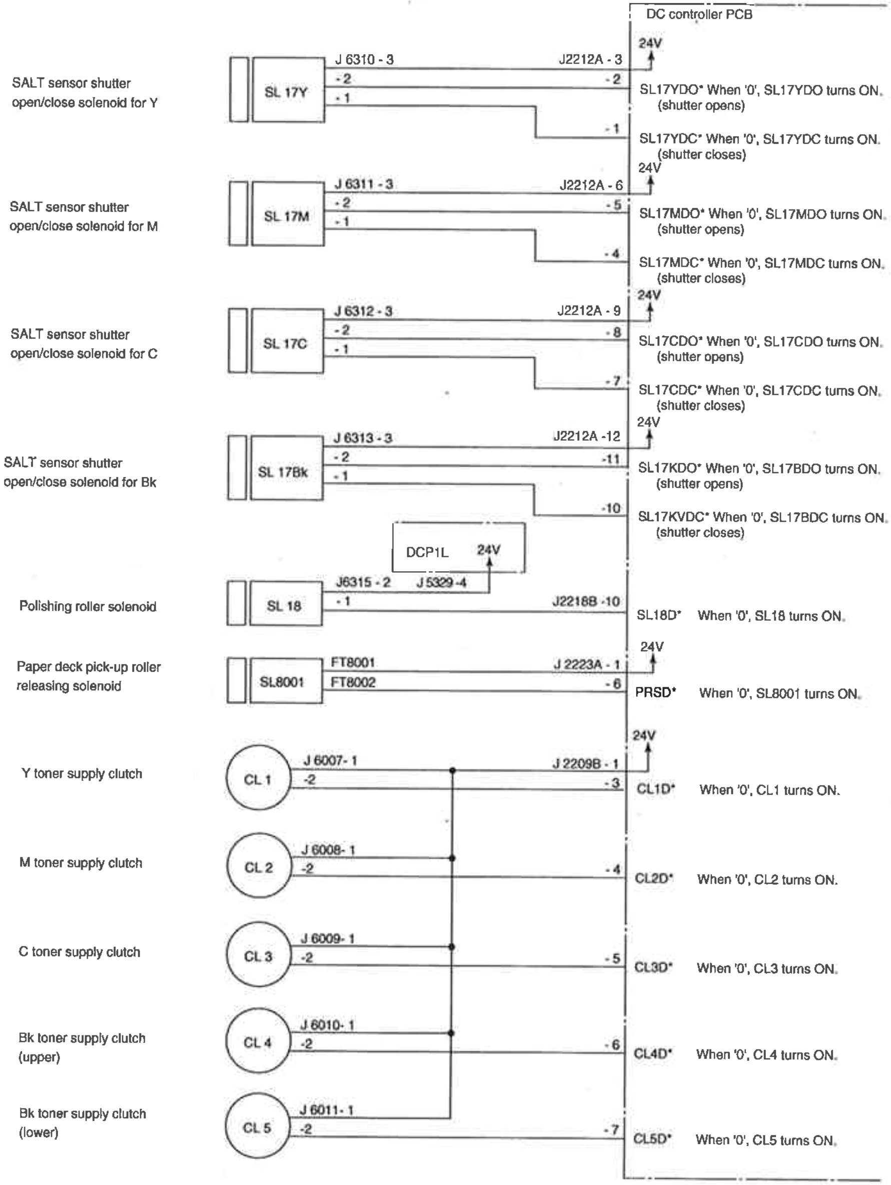

DC controller PCB
SALT sensor shutter open/close solenoid for Y
SL 17Y
J 6310 - 3
-2
-1
J2212A - 3
-2
-1
24V
SL17YDO* When '0', SL17YDO turns ON. (shutter opens)
SL17YDC* When '0', SL17YDC turns ON. (shutter closes)
SALT sensor shutter open/close solenoid for M
SL 17M
J 6311 - 3
-2
-1
J2212A - 6
-5
-4
24V
SL17MDO* When '0', SL17MDO turns ON. (shutter opens)
SL17MDC* When '0', SL17MDC turns ON. (shutter closes)
SALT sensor shutter open/close solenoid for C
SL 17C
J 6312 - 3
-2
-1
J2212A - 9
-8
-7
24V
SL17CDO* When '0', SL17CDO turns ON. (shutter opens)
SL17CDC* When '0', SL17CDC turns ON. (shutter closes)
SALT sensor shutter open/close solenoid for Bk
SL 17Bk
J 6313 - 3
-2
-1
J2212A -12
-11
-10
24V
SL17KDO* When '0', SL17BDO turns ON. (shutter opens)
SL17KVDC* When '0', SL17BDC turns ON. (shutter closes)
DCP1L
24V
Polishing roller solenoid
SL 18
J6315 - 2
J 5329 -4
-1
J2218B -10
SL18D* When '0', SL18 turns ON.
Paper deck pick-up roller releasing solenoid
SL8001
FT8001
FT8002
J 2223A - 1
-6
24V
PRSD* When '0', SL8001 turns ON.
24V
Y toner supply clutch
CL 1
J 6007- 1
-2
J 2209B - 1
-3
CL1D* When '0', CL1 turns ON.
M toner supply clutch
CL 2
J 6008- 1
-2
-4
CL2D* When '0', CL2 turns ON.
C toner supply clutch
CL 3
J 6009- 1
-2
-5
CL3D* When '0', CL3 turns ON.
Bk toner supply clutch (upper)
CL 4
J 6010- 1
-2
-6
CL4D* When '0', CL4 turns ON.
Bk toner supply clutch (lower)
CL 5
J 6011- 1
-2
-7
CL5D* When '0', CL5 turns ON.

Figure 3-117

Outputs from the DC Controller PCB (5/12)

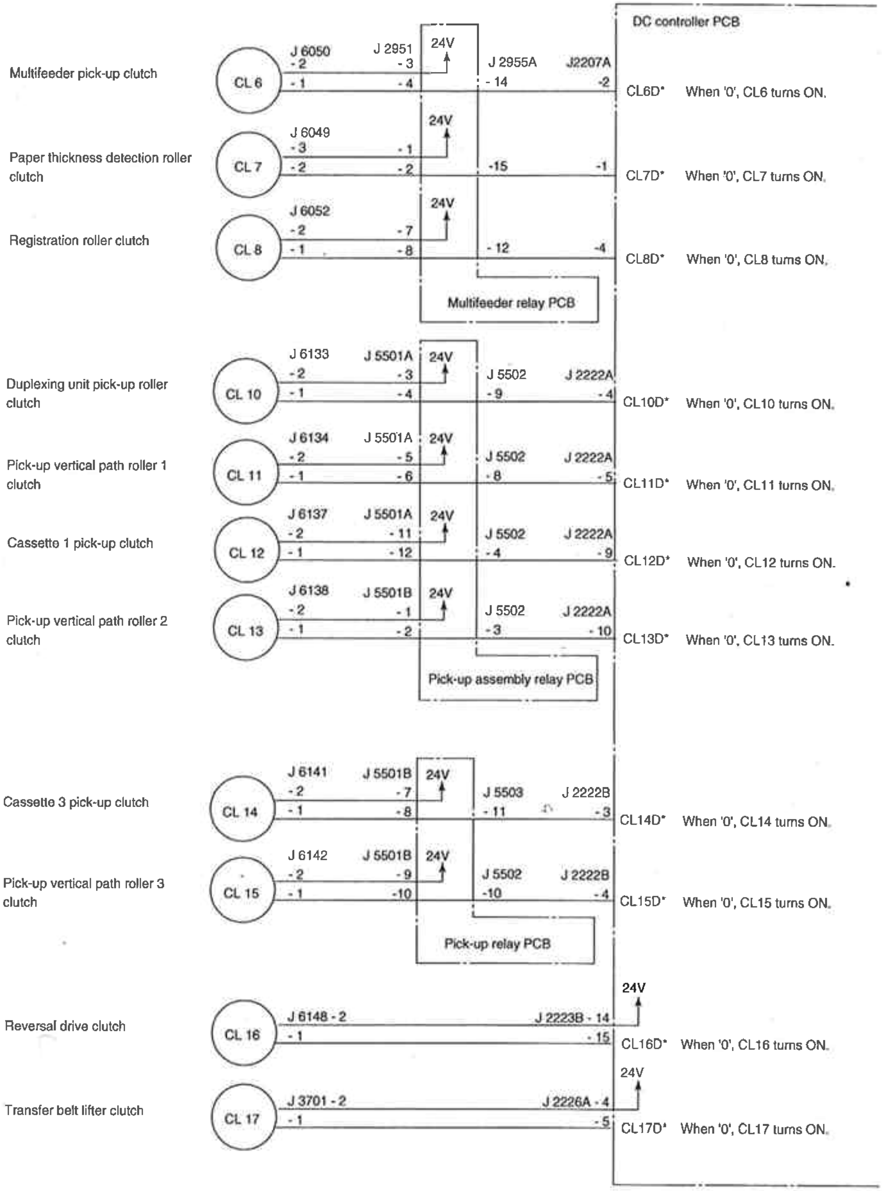

DC controller PCB
Multifeeder pick-up clutch
CL 6
J 6050
-2
-1
J 2951
-3
-4
24V
J 2955A
-14
J2207A
-2
CL6D*
When '0', CL6 turns ON.
Paper thickness detection roller clutch
CL 7
J 6049
-3
-2
-1
-2
24V
-15
-1
CL7D*
When '0', CL7 turns ON.
Registration roller clutch
CL 8
J 6052
-2
-1
-7
-8
24V
-12
-4
CL8D*
When '0', CL8 turns ON.
Multifeeder relay PCB
Duplexing unit pick-up roller clutch
CL 10
J 6133
-2
-1
J 5501A
-3
-4
24V
J 5502
-9
J 2222A
-4
CL10D*
When '0', CL10 turns ON.
Pick-up vertical path roller 1 clutch
CL 11
J 6134
-2
-1
J 5501A
-5
-6
24V
J 5502
-8
J 2222A
-5
CL11D*
When '0', CL11 turns ON.
Cassette 1 pick-up clutch
CL 12
J 6137
-2
-1
J 5501A
-11
-12
24V
J 5502
-4
J 2222A
-9
CL12D*
When '0', CL12 turns ON.
Pick-up vertical path roller 2 clutch
CL 13
J 6138
-2
-1
J 5501B
-1
-2
24V
J 5502
-3
J 2222A
-10
CL13D*
When '0', CL13 turns ON.
Pick-up assembly relay PCB
Cassette 3 pick-up clutch
CL 14
J 6141
-2
-1
J 5501B
-7
-8
24V
J 5503
-11
J 2222B
-3
CL14D*
When '0', CL14 turns ON.
Pick-up vertical path roller 3 clutch
CL 15
J 6142
-2
-1
J 5501B
-9
-10
24V
J 5502
-10
J 2222B
-4
CL15D*
When '0', CL15 turns ON.
Pick-up relay PCB
Reversal drive clutch
CL 16
J 6148 - 2
-1
J 2223B - 14
-15
24V
CL16D*
When '0', CL16 turns ON.
Transfer belt lifter clutch
CL 17
J 3701 - 2
-1
J 2226A - 4
-5
24V
CL17D*
When '0', CL17 turns ON.

Figure 3-118

Outputs from the DC Controller PCB (6/12)

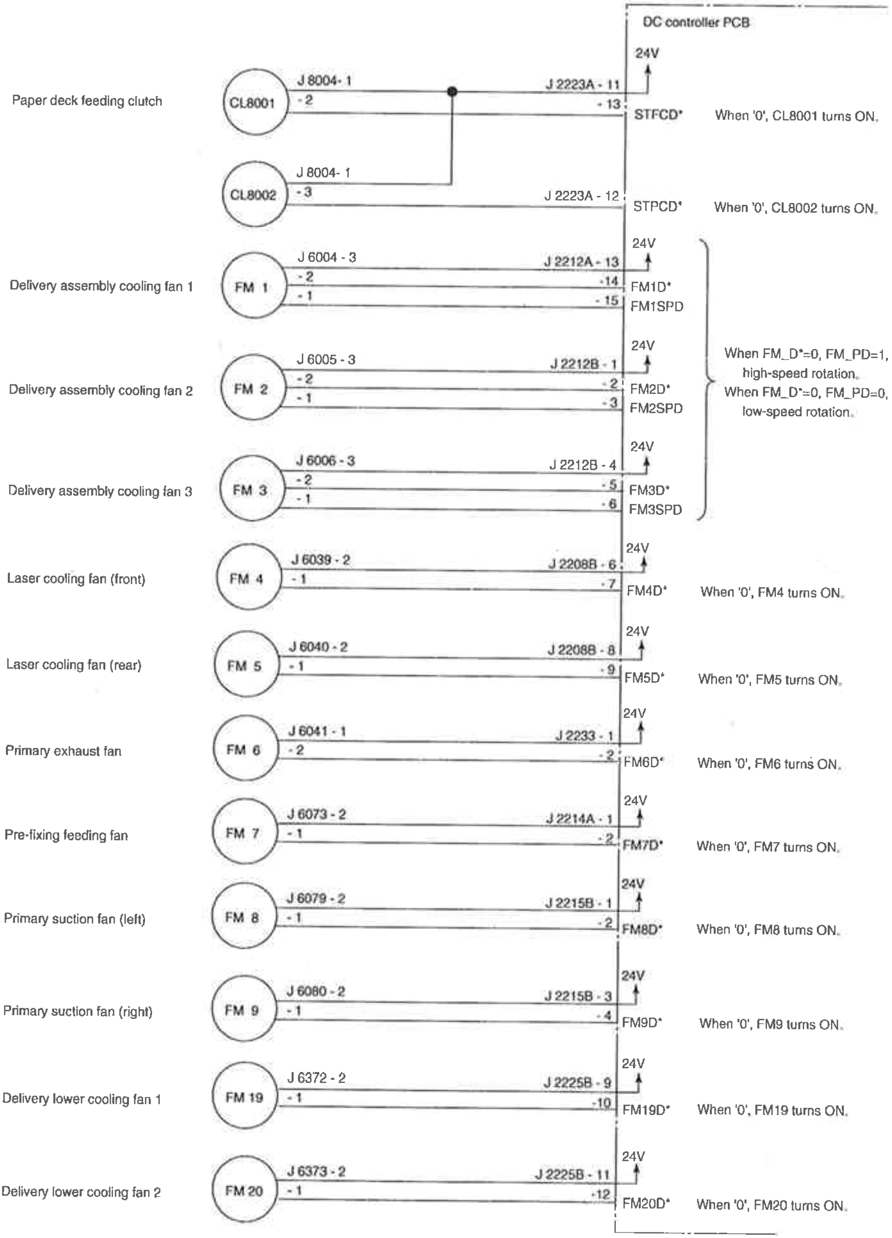

DC controller PCB
Paper deck feeding clutch
CL8001
J 8004- 1
-2
J 2223A - 11
-13
24V
STFCD*
When '0', CL8001 turns ON.
CL8002
J 8004- 1
-3
J 2223A - 12
STPCD*
When '0', CL8002 turns ON.
Delivery assembly cooling fan 1
FM 1
J 6004 - 3
-2
-1
J 2212A - 13
-14
-15
24V
FM1D*
FM1SPD
Delivery assembly cooling fan 2
FM 2
J 6005 - 3
-2
-1
J 2212B - 1
-2
-3
24V
FM2D*
FM2SPD
Delivery assembly cooling fan 3
FM 3
J 6006 - 3
-2
-1
J 2212B - 4
-5
-6
24V
FM3D*
FM3SPD
When FM_D*=0, FM_PD=1,
high-speed rotation.
When FM_D*=0, FM_PD=0,
low-speed rotation.
Laser cooling fan (front)
FM 4
J 6039 - 2
-1
J 2208B - 6
-7
24V
FM4D*
When '0', FM4 turns ON.
Laser cooling fan (rear)
FM 5
J 6040 - 2
-1
J 2208B - 8
-9
24V
FM5D*
When '0', FM5 turns ON.
Primary exhaust fan
FM 6
J 6041 - 1
-2
J 2233 - 1
-2
24V
FM6D*
When '0', FM6 turns ON.
Pre-fixing feeding fan
FM 7
J 6073 - 2
-1
J 2214A - 1
-2
24V
FM7D*
When '0', FM7 turns ON.
Primary suction fan (left)
FM 8
J 6079 - 2
-1
J 2215B - 1
-2
24V
FM8D*
When '0', FM8 turns ON.
Primary suction fan (right)
FM 9
J 6080 - 2
-1
J 2215B - 3
-4
24V
FM9D*
When '0', FM9 turns ON.
Delivery lower cooling fan 1
FM 19
J 6372 - 2
-1
J 2225B - 9
-10
24V
FM19D*
When '0', FM19 turns ON.
Delivery lower cooling fan 2
FM 20
J 6373 - 2
-1
J 2225B - 11
-12
24V
FM20D*
When '0', FM20 turns ON.

Figure 3-119

Outputs from the DC Controller PCB (7/12)

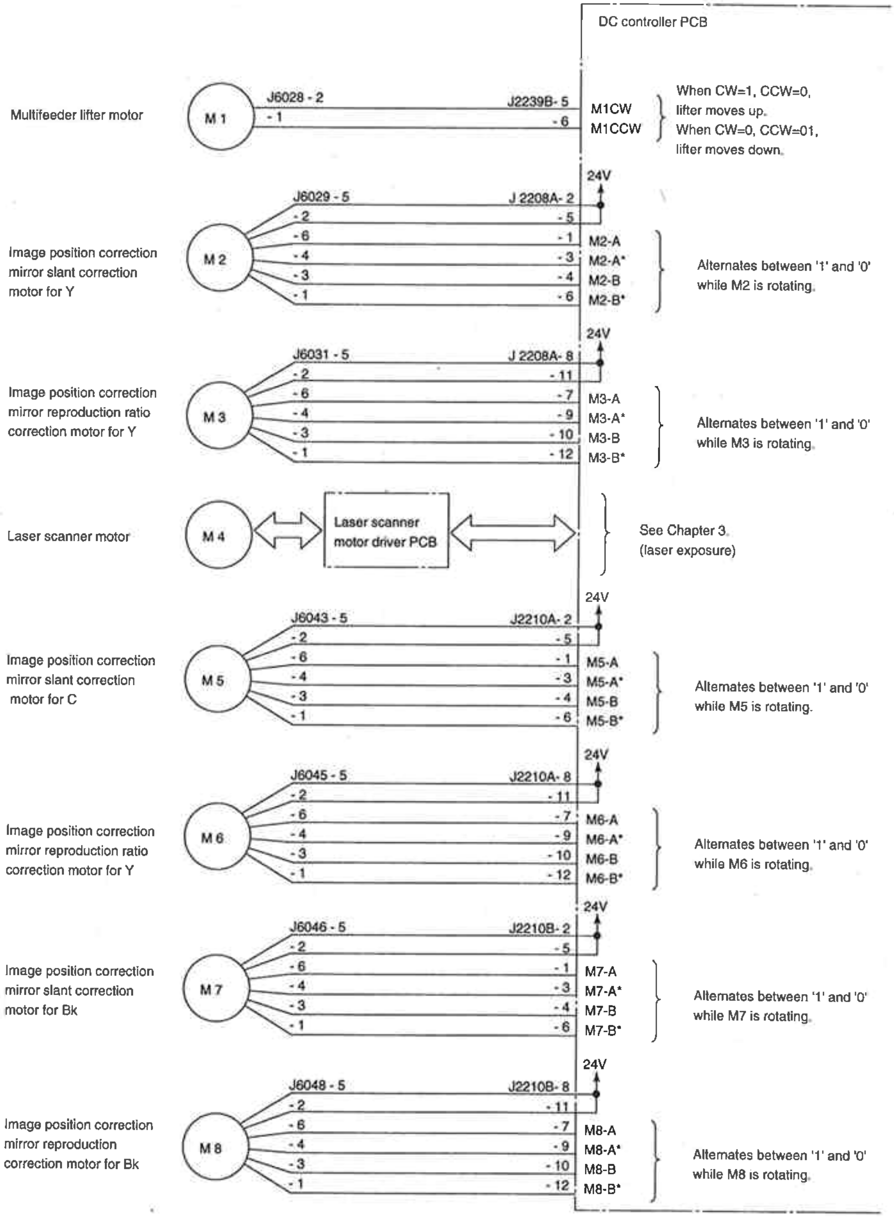

DC controller PCB
Multifeeder lifter motor
M 1
J6028 - 2
- 1
J2239B- 5
- 6
M1CW
M1CCW
When CW=1, CCW=0, lifter moves up.
When CW=0, CCW=01, lifter moves down.
24V
J6029 - 5
- 2
- 6
- 4
- 3
- 1
J 2208A- 2
- 5
- 1
- 3
- 4
- 6
Image position correction mirror slant correction motor for Y
M 2
M2-A
M2-A*
M2-B
M2-B*
Alternates between '1' and '0' while M2 is rotating.
24V
J6031 - 5
- 2
- 6
- 4
- 3
- 1
J 2208A- 8
- 11
- 7
- 9
- 10
- 12
Image position correction mirror reproduction ratio correction motor for Y
M 3
M3-A
M3-A*
M3-B
M3-B*
Alternates between '1' and '0' while M3 is rotating.
Laser scanner motor
M 4
Laser scanner motor driver PCB
See Chapter 3. (laser exposure)
24V
J6043 - 5
- 2
- 6
- 4
- 3
- 1
J2210A- 2
- 5
- 1
- 3
- 4
- 6
Image position correction mirror slant correction motor for C
M 5
M5-A
M5-A*
M5-B
M5-B*
Alternates between '1' and '0' while M5 is rotating.
24V
J6045 - 5
- 2
- 6
- 4
- 3
- 1
J2210A- 8
- 11
- 7
- 9
- 10
- 12
Image position correction mirror reproduction ratio correction motor for Y
M 6
M6-A
M6-A*
M6-B
M6-B*
Alternates between '1' and '0' while M6 is rotating.
24V
J6046 - 5
- 2
- 6
- 4
- 3
- 1
J2210B- 2
- 5
- 1
- 3
- 4
- 6
Image position correction mirror slant correction motor for Bk
M 7
M7-A
M7-A*
M7-B
M7-B*
Alternates between '1' and '0' while M7 is rotating.
24V
J6048 - 5
- 2
- 6
- 4
- 3
- 1
J2210B- 8
- 11
- 7
- 9
- 10
- 12
Image position correction mirror reproduction correction motor for Bk
M 8
M8-A
M8-A*
M8-B
M8-B*
Alternates between '1' and '0' while M8 is rotating.

Figure 3-120

Outputs from the DC Controller PCB (8/12)

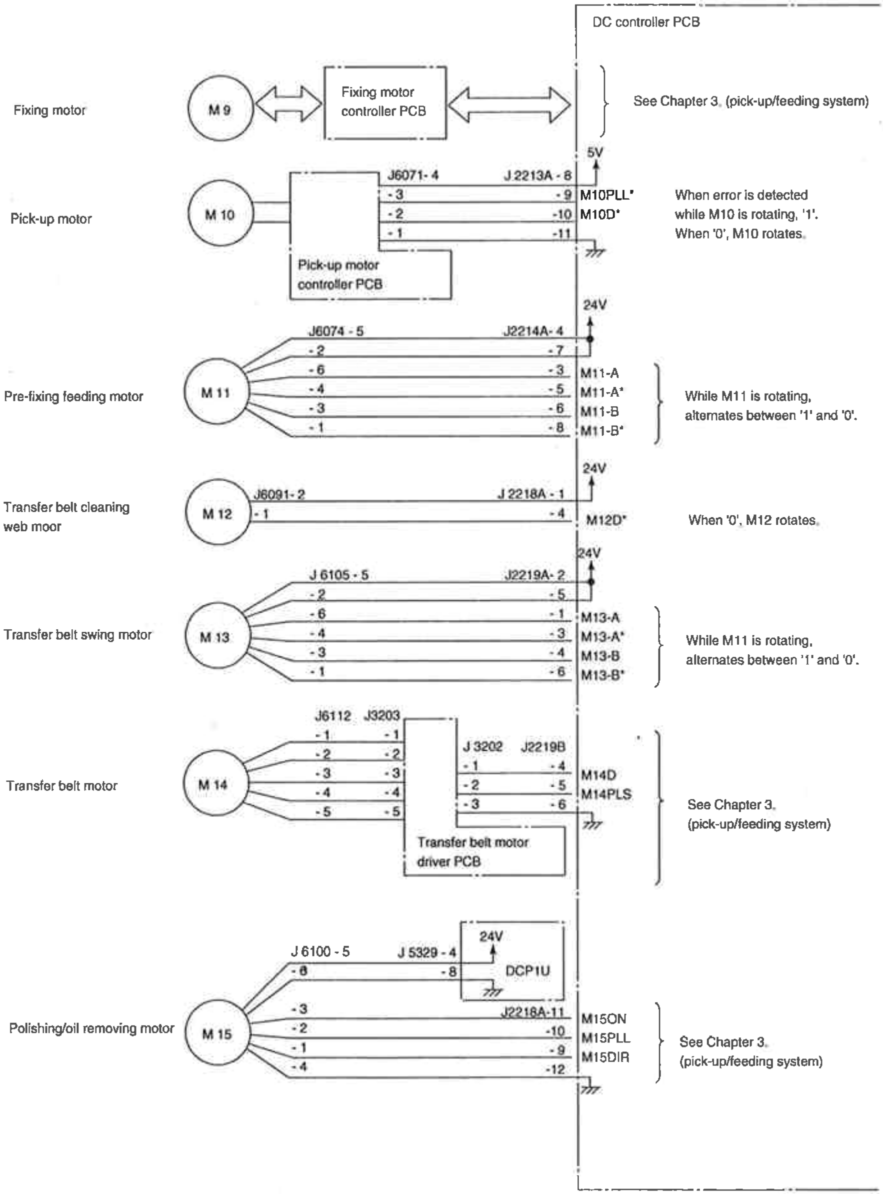

DC controller PCB
Fixing motor
M 9
Fixing motor controller PCB
See Chapter 3. (pick-up/feeding system)
5V
Pick-up motor
M 10
J6071- 4
-3
-2
-1
J 2213A - 8
-9
-10
-11
M10PLL*
M10D*
Pick-up motor controller PCB
When error is detected while M10 is rotating, '1'. When '0', M10 rotates.
24V
Pre-fixing feeding motor
M 11
J6074 - 5
-2
-6
-4
-3
-1
J2214A- 4
-7
-3
-5
-6
-8
M11-A
M11-A*
M11-B
M11-B*
While M11 is rotating, alternates between '1' and '0'.
24V
Transfer belt cleaning web moor
M 12
J6091- 2
-1
J 2218A - 1
-4
M12D*
When '0', M12 rotates.
24V
Transfer belt swing motor
M 13
J 6105 - 5
-2
-6
-4
-3
-1
J2219A- 2
-5
-1
-3
-4
-6
M13-A
M13-A*
M13-B
M13-B*
While M11 is rotating, alternates between '1' and '0'.
Transfer belt motor
M 14
J6112
J3203
-1
-2
-3
-4
-5
J 3202
J2219B
-1
-2
-3
-4
-5
-6
M14D
M14PLS
Transfer belt motor driver PCB
See Chapter 3. (pick-up/feeding system)
Polishing/oil removing motor
M 15
J 6100 - 5
J 5329 - 4
-6
-8
24V
DCP1U
-3
-2
-1
-4
J2218A-11
-10
-9
-12
M15ON
M15PLL
M15DIR
See Chapter 3. (pick-up/feeding system)

Figure 3-121

Outputs from the DC Controller PCB (9/12)

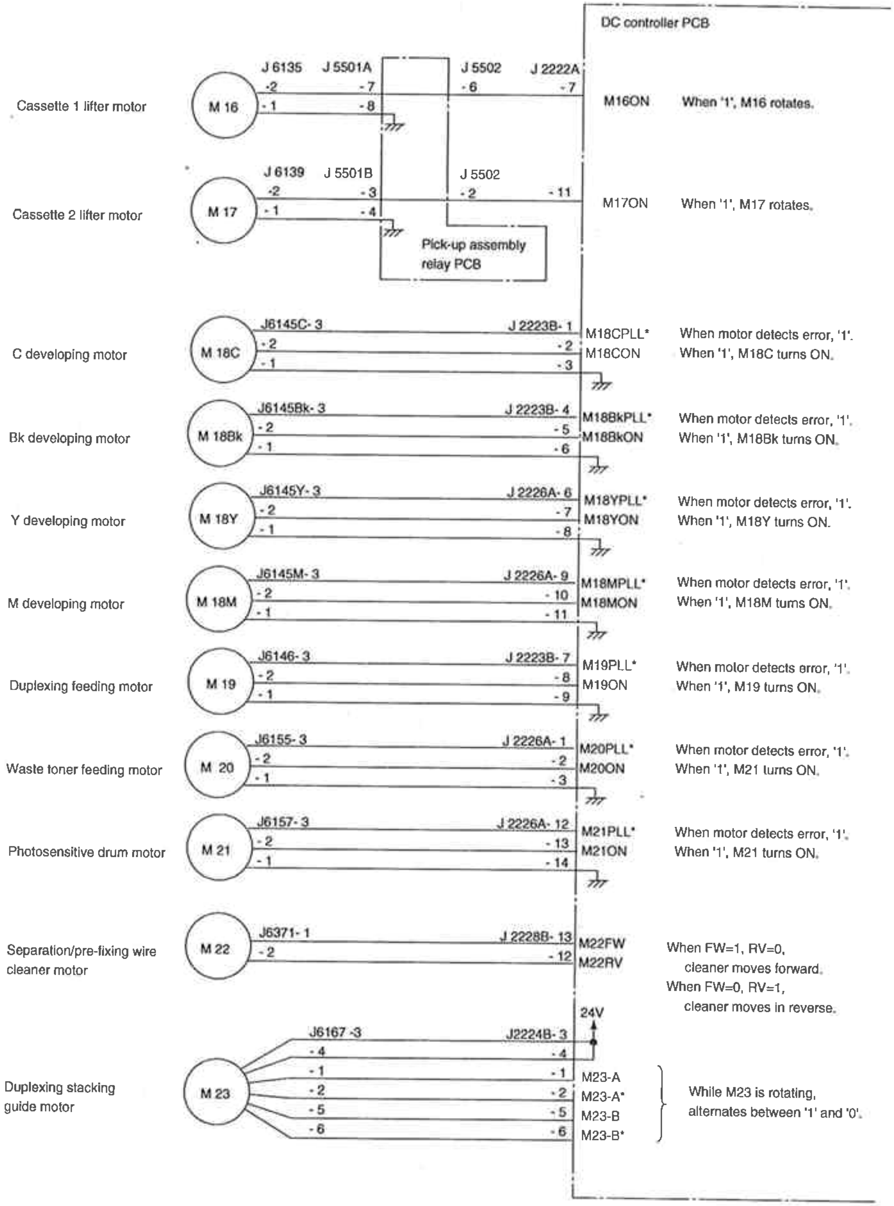

DC controller PCB
Cassette 1 lifter motor
M 16
J 6135
-2
-1
J 5501A
-7
-8
J 5502
-6
J 2222A
-7
M16ON
When '1', M16 rotates.
Cassette 2 lifter motor
M 17
J 6139
-2
-1
J 5501B
-3
-4
J 5502
-2
-11
M17ON
When '1', M17 rotates.
Pick-up assembly relay PCB
C developing motor
M 18C
J6145C- 3
-2
-1
J 2223B- 1
-2
-3
M18CPLL*
M18CON
When motor detects error, '1'.
When '1', M18C turns ON.
Bk developing motor
M 18Bk
J6145Bk- 3
-2
-1
J 2223B- 4
-5
-6
M18BkPLL*
M18BkON
When motor detects error, '1'.
When '1', M18Bk turns ON.
Y developing motor
M 18Y
J6145Y- 3
-2
-1
J 2226A- 6
-7
-8
M18YPLL*
M18YON
When motor detects error, '1'.
When '1', M18Y turns ON.
M developing motor
M 18M
J6145M- 3
-2
-1
J 2226A- 9
-10
-11
M18MPLL*
M18MON
When motor detects error, '1'.
When '1', M18M turns ON.
Duplexing feeding motor
M 19
J6146- 3
-2
-1
J 2223B- 7
-8
-9
M19PLL*
M19ON
When motor detects error, '1'.
When '1', M19 turns ON.
Waste toner feeding motor
M 20
J6155- 3
-2
-1
J 2226A- 1
-2
-3
M20PLL*
M20ON
When motor detects error, '1'.
When '1', M21 turns ON.
Photosensitive drum motor
M 21
J6157- 3
-2
-1
J 2226A- 12
-13
-14
M21PLL*
M21ON
When motor detects error, '1'.
When '1', M21 turns ON.
Separation/pre-fixing wire cleaner motor
M 22
J6371- 1
-2
J 2228B- 13
-12
M22FW
M22RV
When FW=1, RV=0, cleaner moves forward.
When FW=0, RV=1, cleaner moves in reverse.
24V
Duplexing stacking guide motor
M 23
J6167 -3
-4
-1
-2
-5
-6
J2224B- 3
-4
-1
-2
-5
-6
M23-A
M23-A*
M23-B
M23-B*
While M23 is rotating, alternates between '1' and '0'.

Figure 3-122

Outputs from the DC Controller PCB (10/12)

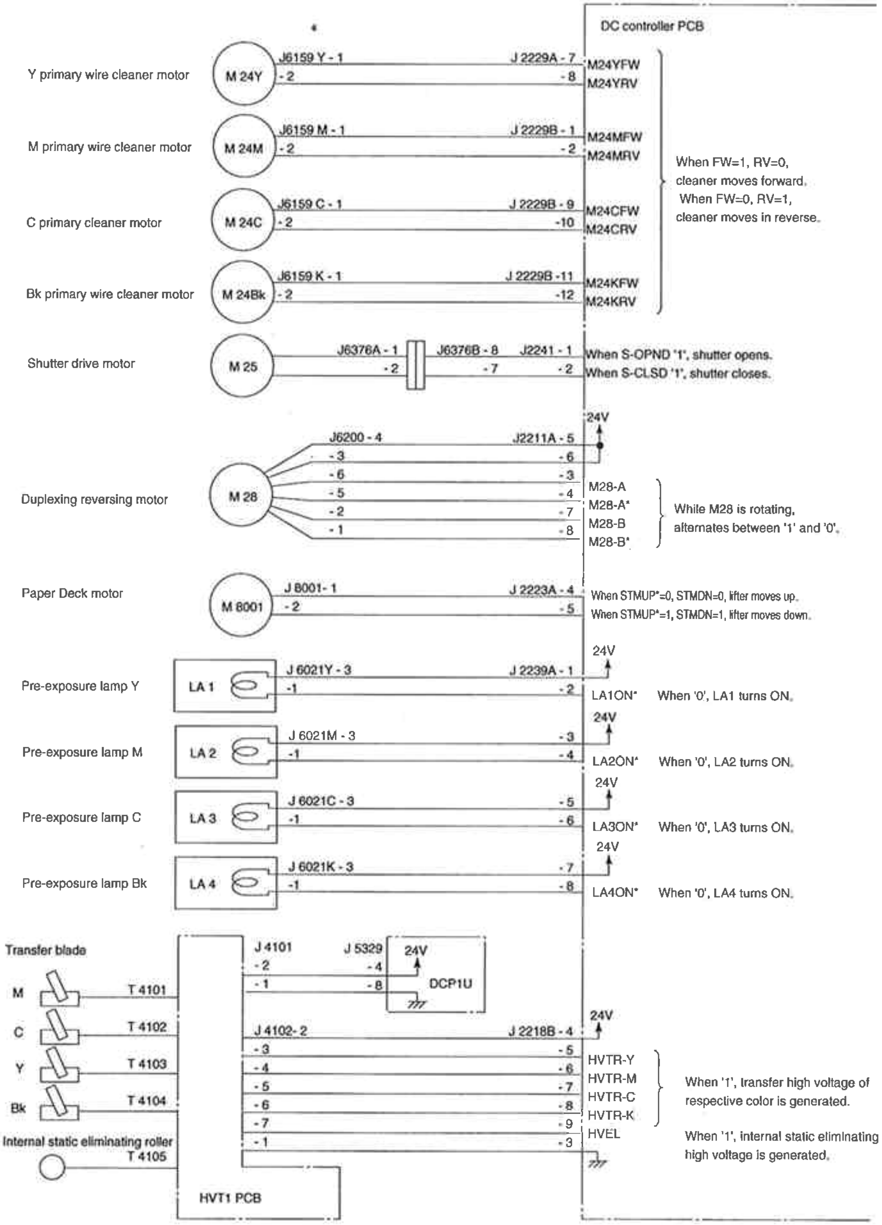
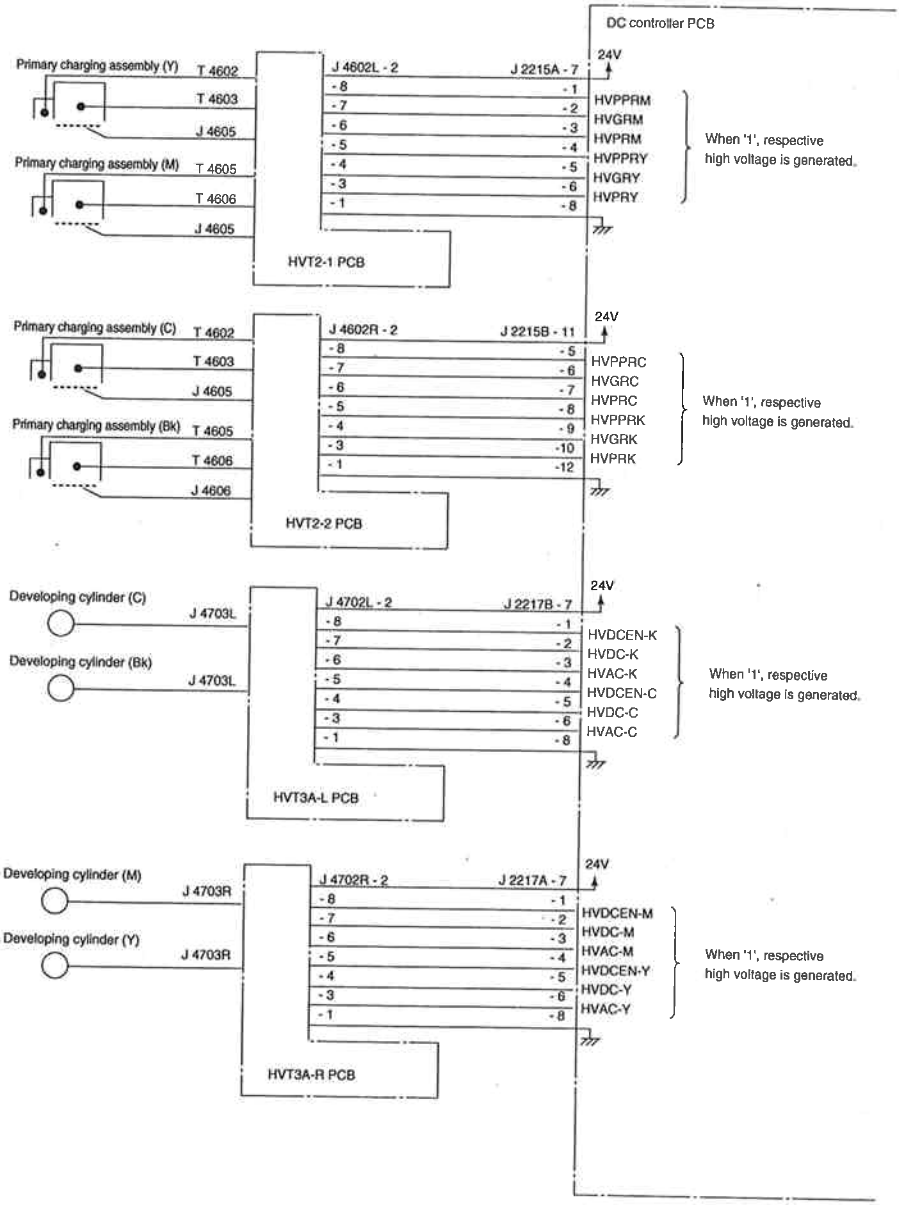

DC controller PCB
Y primary wire cleaner motor
M 24Y
J6159 Y - 1
-2
J 2229A - 7
-8
M24YFW
M24YRV
M primary wire cleaner motor
M 24M
J6159 M - 1
-2
J 2229B - 1
-2
M24MFW
M24MRV
C primary cleaner motor
M 24C
J6159 C - 1
-2
J 2229B - 9
-10
M24CFW
M24CRV
Bk primary wire cleaner motor
M 24Bk
J6159 K - 1
-2
J 2229B -11
-12
M24KFW
M24KRV
When FW=1, RV=0, cleaner moves forward.
When FW=0, RV=1, cleaner moves in reverse.
Shutter drive motor
M 25
J6376A - 1
-2
J6376B - 8
-7
J2241 - 1
-2
When S-OPND '1', shutter opens.
When S-CLSD '1', shutter closes.
Duplexing reversing motor
M 28
J6200 - 4
-3
-6
-5
-2
-1
J2211A - 5
-6
-3
-4
-7
-8
24V
M28-A
M28-A*
M28-B
M28-B*
While M28 is rotating, alternates between '1' and '0'.
Paper Deck motor
M 8001
J 8001- 1
-2
J 2223A - 4
-5
When STMUP*=0, STMDN=0, lifter moves up.
When STMUP*=1, STMDN=1, lifter moves down.
Pre-exposure lamp Y
LA 1
J 6021Y - 3
-1
J 2239A - 1
-2
24V
LA1ON*
When '0', LA1 turns ON.
Pre-exposure lamp M
LA 2
J 6021M - 3
-1
-3
-4
24V
LA2ON*
When '0', LA2 turns ON.
Pre-exposure lamp C
LA 3
J 6021C - 3
-1
-5
-6
24V
LA3ON*
When '0', LA3 turns ON.
Pre-exposure lamp Bk
LA 4
J 6021K - 3
-1
-7
-8
24V
LA4ON*
When '0', LA4 turns ON.
Transfer blade
M
T 4101
C
T 4102
Y
T 4103
Bk
T 4104
Internal static eliminating roller
T 4105
J 4101
-2
-1
J 5329
-4
-8
24V
DCP1U
J 4102- 2
-3
-4
-5
-6
-7
-1
J 2218B - 4
-5
-6
-7
-8
-9
-3
24V
HVTR-Y
HVTR-M
HVTR-C
HVTR-K
HVEL
When '1', transfer high voltage of respective color is generated.
When '1', internal static eliminating high voltage is generated.
HVT1 PCB

Figure 3-123

Outputs from the DC Controller PCB (11/12)


DC controller PCB
Primary charging assembly (Y)
T 4602
T 4603
J 4605
Primary charging assembly (M)
T 4605
T 4606
J 4605
J 4602L - 2
-8
-7
-6
-5
-4
-3
-1
J 2215A - 7
-1
-2
-3
-4
-5
-6
-8
24V
HVPPRM
HVGRM
HVPRM
HVPPRY
HVGRY
HVPRY
HVT2-1 PCB
Primary charging assembly (C)
T 4602
T 4603
J 4605
Primary charging assembly (Bk)
T 4605
T 4606
J 4606
J 4602R - 2
-8
-7
-6
-5
-4
-3
-1
J 2215B - 11
-5
-6
-7
-8
-9
-10
-12
24V
HVPPRC
HVGRC
HVPRC
HVPPRK
HVGRK
HVPRK
HVT2-2 PCB
Developing cylinder (C)
J 4703L
Developing cylinder (Bk)
J 4703L
J 4702L - 2
-8
-7
-6
-5
-4
-3
-1
J 2217B - 7
-1
-2
-3
-4
-5
-6
-8
24V
HVDCEN-K
HVDC-K
HVAC-K
HVDCEN-C
HVDC-C
HVAC-C
HVT3A-L PCB
Developing cylinder (M)
J 4703R
Developing cylinder (Y)
J 4703R
J 4702R - 2
-8
-7
-6
-5
-4
-3
-1
J 2217A - 7
-1
-2
-3
-4
-5
-6
-8
24V
HVDCEN-M
HVDC-M
HVAC-M
HVDCEN-Y
HVDC-Y
HVAC-Y
HVT3A-R PCB

When '1', respective high voltage is generated.

When '1', respective high voltage is generated.

When '1', respective high voltage is generated.

When '1', respective high voltage is generated.

Figure 3-124

Outputs from the DC Controller PCB (12/12)

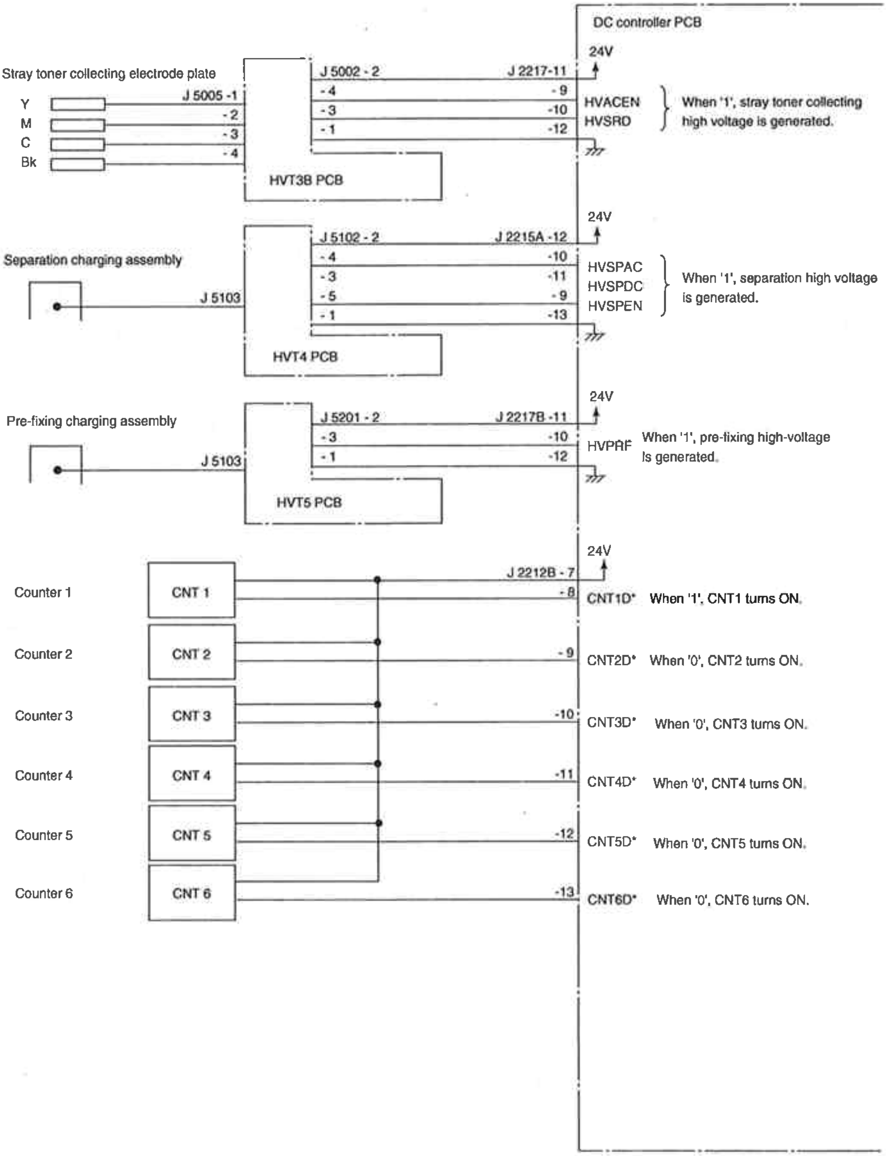

DC controller PCB
Stray toner collecting electrode plate
Y
M
C
Bk
J 5005 -1
-2
-3
-4
J 5002 - 2
-4
-3
-1
J 2217-11
-9
-10
-12
24V
HVACEN
HVSRD
When '1', stray toner collecting high voltage is generated.
HVT3B PCB
Separation charging assembly
J 5103
J 5102 - 2
-4
-3
-5
-1
J 2215A -12
-10
-11
-9
-13
24V
HVSPAC
HVSPDC
HVSPEN
When '1', separation high voltage is generated.
HVT4 PCB
Pre-fixing charging assembly
J 5103
J 5201 - 2
-3
-1
J 2217B -11
-10
-12
24V
HVPRF
When '1', pre-fixing high-voltage is generated.
HVT5 PCB
24V
J 2212B - 7
Counter 1
CNT 1
-8
CNT1D*
When '1', CNT1 turns ON.
Counter 2
CNT 2
-9
CNT2D*
When '0', CNT2 turns ON.
Counter 3
CNT 3
-10
CNT3D*
When '0', CNT3 turns ON.
Counter 4
CNT 4
-11
CNT4D*
When '0', CNT4 turns ON.
Counter 5
CNT 5
-12
CNT5D*
When '0', CNT5 turns ON.
Counter 6
CNT 6
-13
CNT6D*
When '0', CNT6 turns ON.

Figure 3-125

D. Sequence of Basic Operations

1. Sequence at Power-On

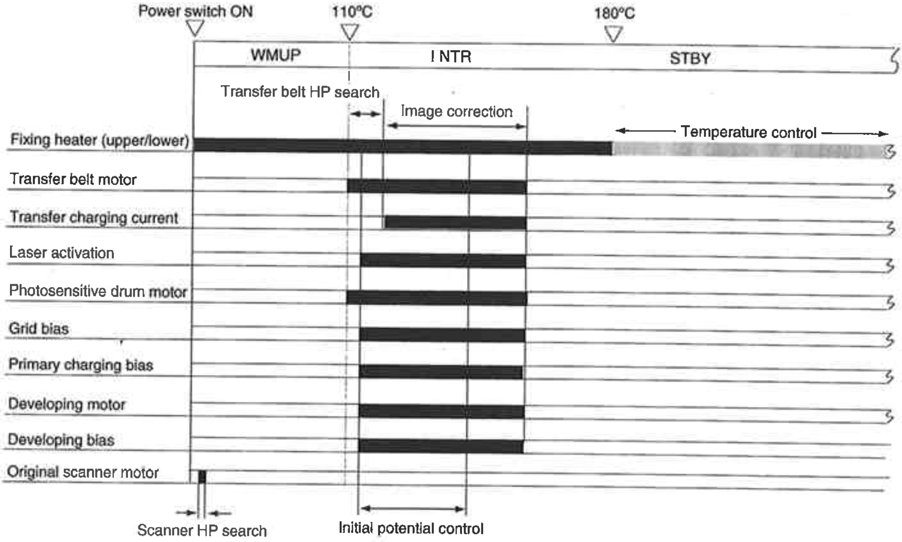


Figure 3-126

- When the fixing temperature reaches 110°C after power-on, the photosensitive drum starts to rotate, and initial potential control will start when the potential on the drum has become stable (when the drum has made a 1/2 rotation).
  When the fixing temperature reaches 110°C, a transfer belt home position search is executed, at the end of which image position correction will start.
- The fixing temperature means the surface temperature of the fixing roller (reading of the thermistor indicated under 'ANALOG' of 'DISPLAY' in service mode).

Period		Purpose	Remarks
WMUP (warm up)	From when the power switch is turned ON until the surface temperature of the upper fixing roller reaches 110°C.	Waits until the fixing roller warms up.	
INTR (initial rotation)	From when the surface temperature of the upper fixing roller has reached 110°C until it reaches 180°C.	Executes image position correction and initial potential control.	
STBY (standby)	From the end of INTR until the Start key is pressed or the power switch is turned OFF.	Waits until a control key (e.g., Start key) is pressed.	

Table 3-101

2. Sequence of Operations

Thick Paper Mode, A4/LTR, 2 Copies, 4-Color, Direct, Cassette 1

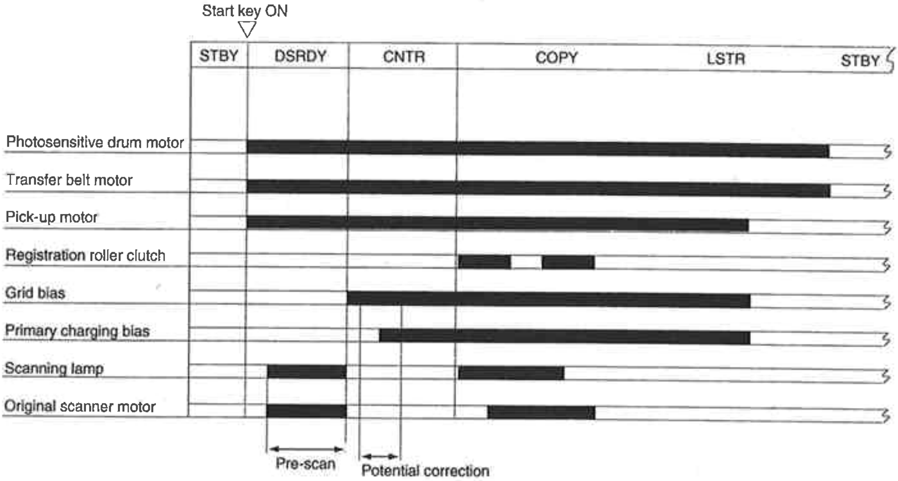


Figure 3-127

Period		Purpose	Remarks
DSRDY (scanner ready)	From when the Start key is pressed until pre-scanning ends.	Executes scanning for an original and shading correction.	
CNTR (control rotation)	From the end of DSRDY until paper is drawn for retention.	Measures and controls the drum surface potential. Picks up paper.	
COPY (copy)	From when paper starts to wrap around the transfer belt until all toner has been transferred to the paper.	Turns ON/OFF the laser according to video signals, and develops and transfers specific colors.	
LSTR (last rotation)	From the end of COPY until the main motor stops.	Discharges paper. Stabilizes the photosensitive drum sensitivity. Removes charges from the transfer belt, and cleans the drum.	

Table 3-102

- The machine's scanner becomes ready for operation when the temperature of the fixing roller reaches a specific value so that the image of the original may be read in response to a press on the Start key. Writing of the image on the surface of the photosensitive drum becomes ready when the image signals have been stored in memory. (Image formation starts in relation to a registration signal.)
  Control in relation to signals other than the registration signal is discussed using separate timing charts.

II. ORIGINAL EXPOSURE SYSTEM

A. Outline

The original exposure system covers functions involved between when originals are exposed and when the reflected light is directed to the CCD. Figure 3-201 shows a cross section of the original exposure system and Figure 3-202 shows its exterior view.

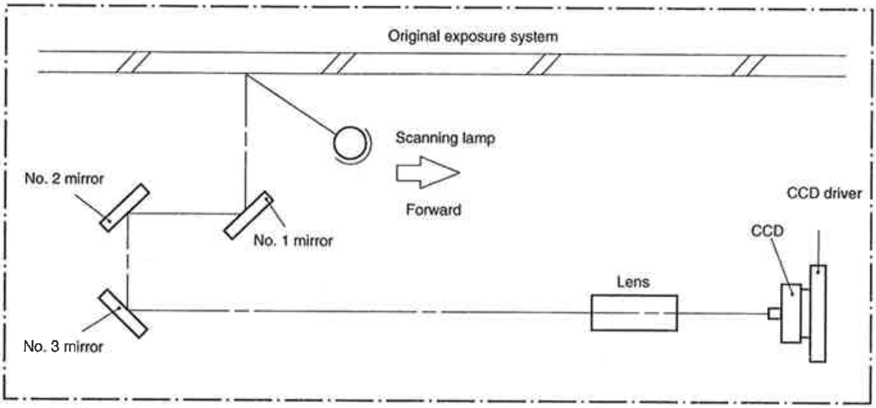

Original exposure system
Scanning lamp
Forward
No. 2 mirror
No. 1 mirror
No. 3 mirror
CCD driver
CCD
Lens

Figure 3-201

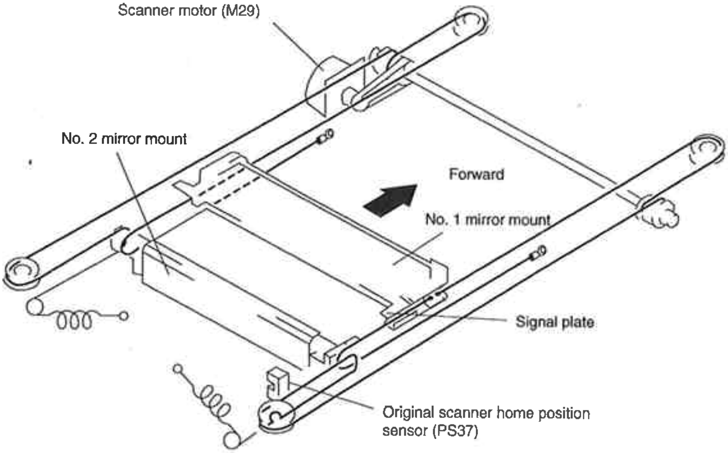
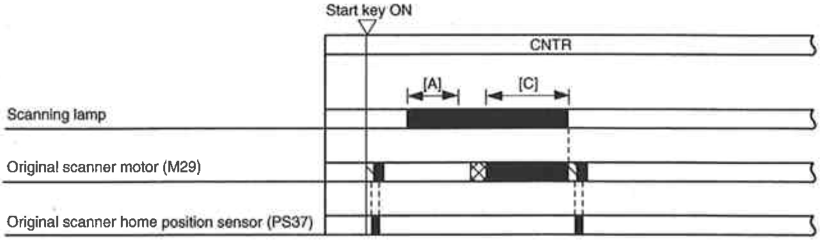

Scanner motor (M29)
No. 2 mirror mount
Forward
No. 1 mirror mount
Signal plate
Original scanner home position sensor (PS37)

Figure 3-202

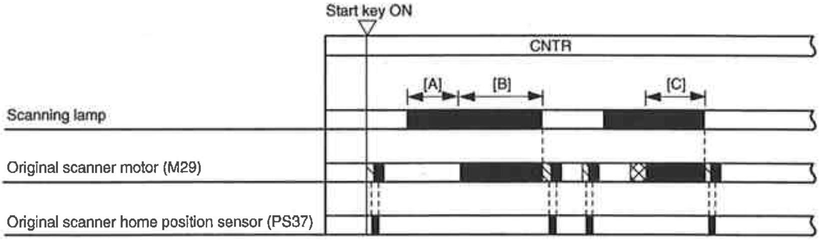
B. Sequence of Basic Operations (original exposure system)

1. Sequence of Operations

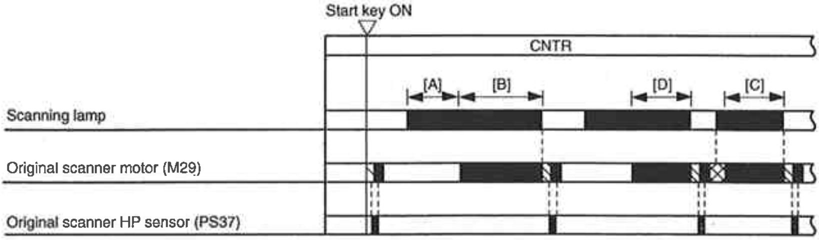
- Without Pre-Scanning (with original detection OFF, ACS OFF, APS OFF)


Start key ON
CNTR
[A]
[C]
Scanning lamp
Original scanner motor (M29)
Original scanner home position sensor (PS37)

- With Pre-Scanning (1 scan over original; standard mode)


Start key ON
CNTR
[A]
[B]
[C]
Scanning lamp
Original scanner motor (M29)
Original scanner home position sensor (PS37)

- With Pre-Scanning (2 scans over original; standard mode + marking)


Start key ON
CNTR
[A]
[B]
[D]
[C]
Scanning lamp
Original scanner motor (M29)
Original scanner HP sensor (PS37)

▨ Reversal (scanner in reverse). ▩ High-speed rotation. ■ Standard CW rotation.

[A] Shading correction.
[B] Original position detection, black original detection, AE measurement.
[C] Original scanning.
[D] Marking area scanning.

Figure 3-203

2. Original Scanner Home Position Sensor and Operations

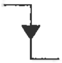
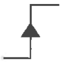
	Original scanner motor		Operation
	Forward	Reverse	
Original scanner home position sensor (PS37: SCHP)			Switches to forward movement.
			Moves forward 1 mm, then stops. (The position reached is home position.)

Table 3-201

The original scanner home position sensor turns on:

- At power-on.
- At start of copying.
- At end of original scanning.
- During CCD adjustment (service mode).

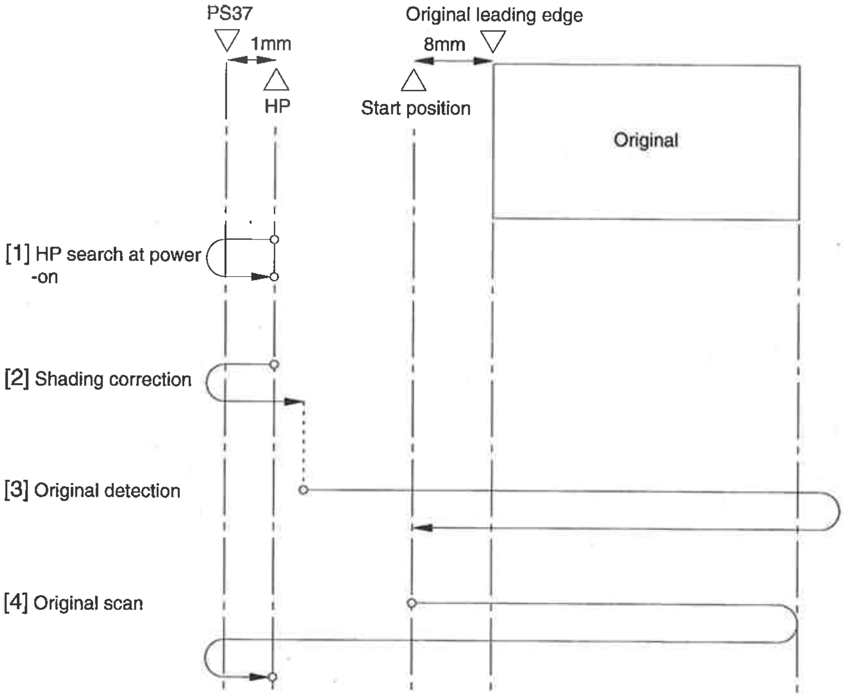

PS37
1mm
HP
Original leading edge
8mm
Start position
Original
[1] HP search at power -on
[2] Shading correction
[3] Original detection
[4] Original scan

Figure 3-204

C. Scanner Motor

1. Outline

Figure 3-205 shows the circuit used to control the scanner motor, and the circuit has the following functions:

1 Controls the direction of rotation of the scanner motor.
2 Controls the speed of rotation of the scanner motor.

The scanner motor changes its direction of rotation between when the scanner moves forward and when it moves in reverse, and its speed of rotation varies according to the selected reproduction ratio.

Its speed of rotation when the scanner is moved in reverse is the same regardless of the selected reproduction ratio. It rotates about 10 times as fast as when the scanner is moved forward in Direct.

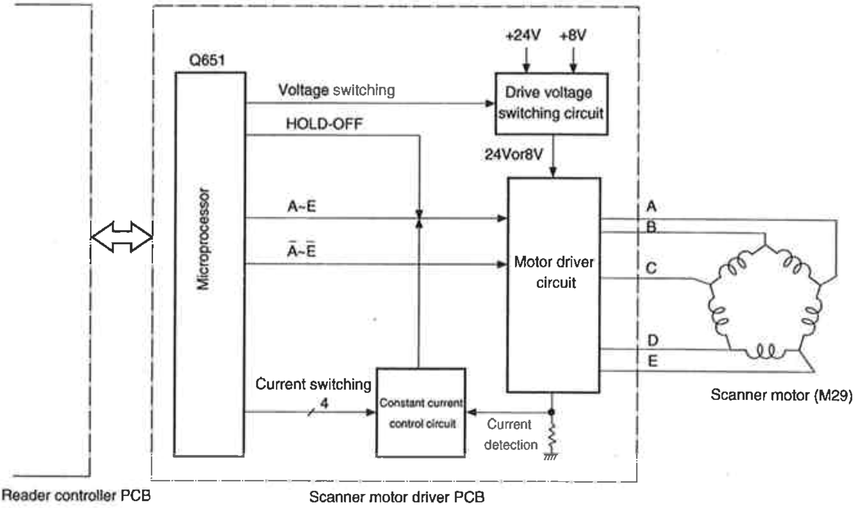

+24V
+8V
Q651
Voltage switching
Drive voltage switching circuit
HOLD-OFF
24Vor8V
Microprocessor
A~E
Ā~Ē
Motor driver circuit
A
B
C
D
E
Current switching
4
Constant current control circuit
Current detection
Scanner motor (M29)
Reader controller PCB
Scanner motor driver PCB

Figure 3-205

2. Operation

The CPU (Q651) on the scanner motor driver PCB receives mode, distance, and reproduction data from the image processor PCB. Then, in response to the start command, it sends drive pulses to the scanner motor to suit these data units. The scanner motor is a 5-phase stepping motor; the direction and the speed of scanning are varied by changing the order of the drive pulses (A through E) and the frequency.

To rotate the motor at a high speed when the scanner is moved in reverse, the drive voltage switching circuit switches the power used to drive the motor from 8 V (forward) to 24 V (reverse).

The constant current control circuit controls the current flowing to the motor to a constant current to suit the speed of rotation.

The circuit cuts the current to the motor by the HOLD-OFF signal while the motor remains at rest during standby to prevent heating of the motor.

D. Changing the Reproduction Ratio

The reproduction ratio in the main scanning direction (drum axis) is changed by skipping the image signals when writing them to line memory (reduction) or repeating them when reading from line memory (enlargement).

The reproduction ratio in the sub scanning direction is changed by moving the mirror mount fast (reduction) or slowly (enlargement).

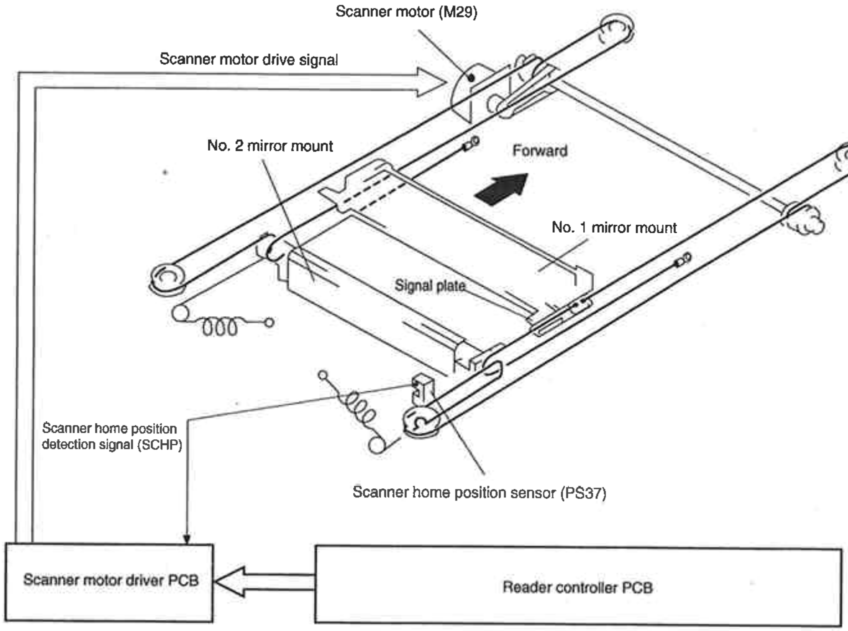

Scanner motor (M29)
Scanner motor drive signal
No. 2 mirror mount
Forward
No. 1 mirror mount
Signal plate
Scanner home position detection signal (SCHP)
Scanner home position sensor (PS37)
Scanner motor driver PCB
Reader controller PCB

Figure 3-206

E. Controlling the Intensity of the Scanning Lamp

1. Outline

Figure 3-207 shows the circuit used to control the intensity of the scanning lamp, and the circuit has the following functions:

1. Turns ON/OFF the scanning lamp.
2. Checks ON/OFF state of the scanning lamp.
3. Controls the intensity of the scanning lamp.
   - The circuit controls the scanning lamp so that the intensity is kept to a specific level against fluctuations in voltage.

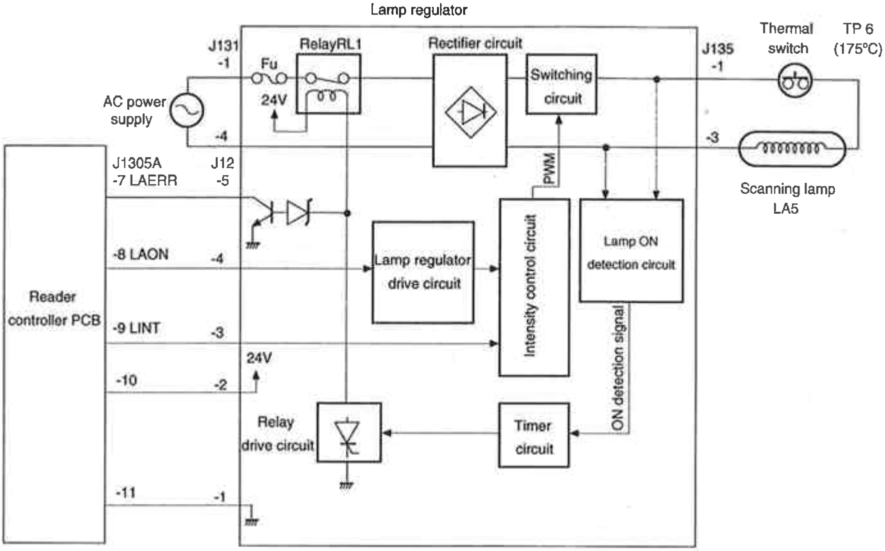

Lamp regulator
J131
-1
RelayRL1
Fu
24V
Rectifier circuit
Switching circuit
J135
-1
Thermal switch
TP 6 (175°C)
AC power supply
-4
-3
Scanning lamp LA5
J1305A
-7 LAERR
J12
-5
PWM
-8 LAON
-4
Lamp regulator drive circuit
Intensity control circuit
Lamp ON detection circuit
Reader controller PCB
-9 LINT
-3
ON detection signal
24V
-10
-2
Relay drive circuit
Timer circuit
-11
-1

Figure 3-207

2. Operations

a. Turning ON/OFF the Scanning Lamp

The lamp regulator drive circuit turns OFF when LAON=0, causing the intensity control circuit and then the scanning lamp (LA5) to turn OFF.

When LAON=1, the lamp regulator drive circuit turns ON to activate the intensity control circuit, thereby turning ON the scanning lamp (LA5).

b. Checking ON/OFF of the Scanning Lamp

When the scanning lamp (LA5) is ON, the lamp ON detection circuit remains ON at all times sending the ON detection signal to the timer circuit.

If the scanning lamp remains ON for about 50 sec or more because of an error, the timer circuit activates the relay drive circuit to turn on the relay (RL1). This condition cuts the AC input and turns OFF the scanning lamp; at the same time, the lamp error signal (LAERR) is sent to the reader controller PCB, indicating 'E220' on the control panel.

When the relay has activated, remove the cause and turn OFF/ON the power switch to reset.

The CLC1000 is equipped with the following two types of protection functions to prevent malfunction of the scanning lamp:

- If the temperature inside the thermal switch exceeds 175°C, the thermal switch turns OFF to cut the power to the scanning lamp.
- If an overcurrent flows because of a short-circuit around the scanning lamp, the fuse turns OFF, thereby cutting off the power to the lamp regulator.

The thermal switch (TP6) is used on a DC line, and its contact is subject to damage upon activation. Do not re-use it once it became activated; otherwise, its operation will be unpredictable.

c. Controlling the Intensity of the Scanning Lamp

The intensity of the scanning lamp is determined by the level of the intensity adjustment signal (LINT) from the image processor PCB.

The intensity control circuit inside the lamp regulator sends pulse signals (PWM) suited to the LINT signal to the switching circuit, which keeps turning ON and OFF at very short intervals.

The current to the scanning lamp is controlled by varying the ON/OFF intervals, ultimately controlling the lamp intensity.

The level of the LINT signal is determined when 'AUTO-ADJ' under 'CCD' of 'FUNC' in service mode is executed; thereafter, it remains the same at all times. Be sure to execute 'AUTO-ADJ' under 'CCD' of 'FUNC' in service mode whenever you have replaced the scanning lamp or the image processor PCB.

III. IMAGE PROCESSING SYSTEM

A. Outline

The image processing system consists of the following:

1. CCD line sensor used to convert the reflected light from originals into analog video signals.
2. Analog processor PCB used to generate digital video signals from analog video signals.
3. Group of PCBs used to process digital video signals (image processor PCB, memory PCB, Preview Monitor Board).

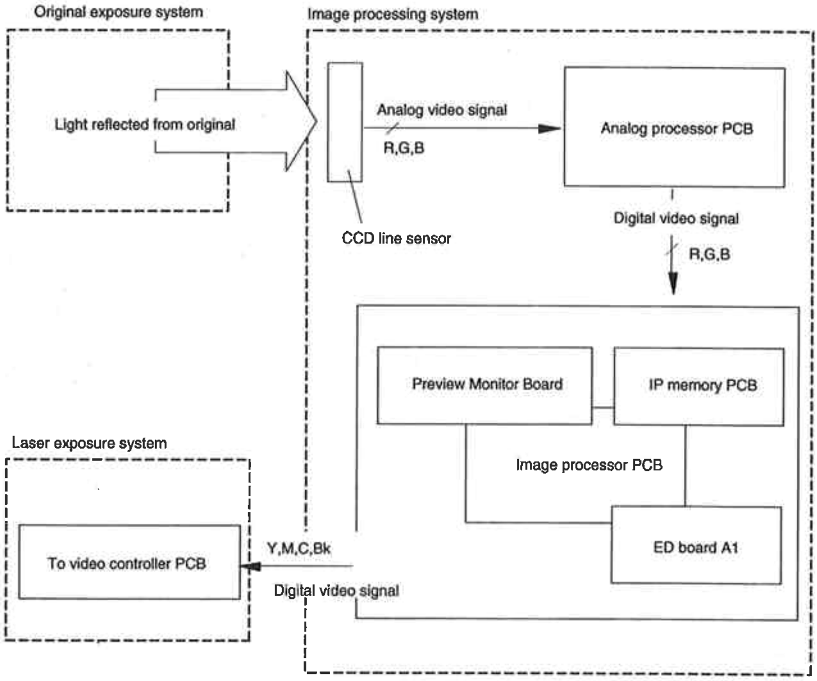

Original exposure system
Light reflected from original
Image processing system
Analog video signal
R,G,B
Analog processor PCB
CCD line sensor
Digital video signal
R,G,B
Preview Monitor Board
IP memory PCB
Image processor PCB
ED board A1
Laser exposure system
To video controller PCB
Y,M,C,Bk
Digital video signal

Figure 3-301

B. CCD/CCD Driver

1. CCD

The CLC1000's image input block is a 3-line CCD line sensor, each line consisting of 5000 photocells (Figure 3-302). Each line is covered with a red, green, or blue color filter.

The light reflected by an original is projected to the CCD line sensor in reduced form, and the light color-separated by the R, G, and B color filters is photo-converted. The signal charges occurring after conversion are synchronized with the shift pulses generated by the analog processor PCB and stored temporarily in the transfer block (single line); then, they are synchronized with the clock pulses generated by the analog processor PCB and sent to the CCD in sequence.

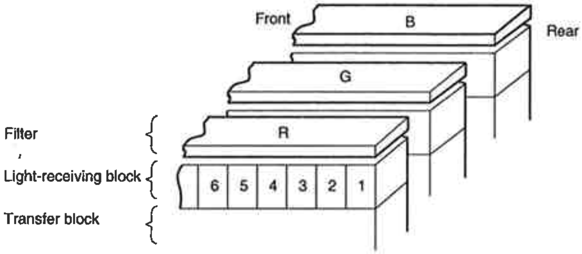

Front
B
Rear
G
Filter
R
Light-receiving block
6
5
4
3
2
1
Transfer block

Figure 3-302

The transfer block and the output block of each line sensor consist of an odd channel and an even channel.

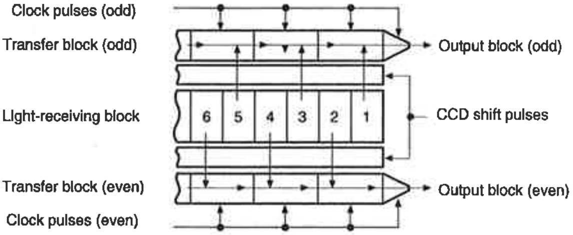

Clock pulses (odd)
Transfer block (odd)
Output block (odd)
CCD shift pulses
Light-receiving block
6
5
4
3
2
1
Transfer block (even)
Output block (even)
Clock pulses (even)

Figure 3-303

C. Analog Image Processing

The analog video signals from the CCD driver is processed on the analog processor PCB (gain adjustment) and converted into digital video signals. The analog processor PCB has the following functions:

1 Corrects the gain of R, G, and B analog video signals.
2 Corrects the offset in the CCD output.
3 Executes A/D conversion.
4 Supplies power to the CCD driver.
5 Generates clock signals for CCD driver and main scanning direction sync signals.

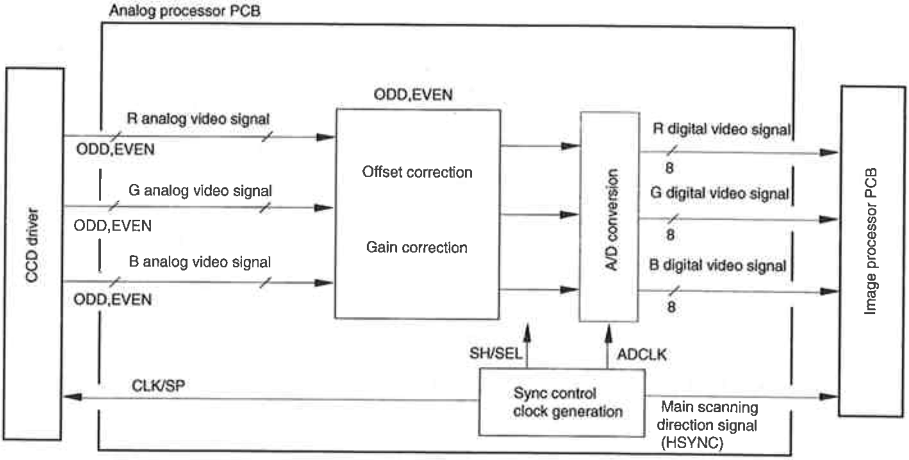

Analog processor PCB
CCD driver
R analog video signal
ODD,EVEN
G analog video signal
ODD,EVEN
B analog video signal
ODD,EVEN
ODD,EVEN
Offset correction
Gain correction
A/D conversion
R digital video signal
8
G digital video signal
8
B digital video signal
8
Image processor PCB
SH/SEL
ADCLK
CLK/SP
Sync control clock generation
Main scanning direction signal (HSYNC)

Figure 3-304

The analog video signals from the CCD driver are subjected to gain correction and offset correction: specifically, the output voltages in the absence of light are made even (offset correction) and the ratio of amplification is made constant to even out the photo-conversion efficiencies of CCD pixels (gain adjustment)

The RGB video signals of the odd and even channels are integrated into a single channel in the offset correction block and are converted into 8-bit digital signals (A/D conversion) according to the voltage level and sent to the image processor PCB.

D. Digital Image Processing

1. Outline

The digital video signals from the analog processor PCB are processed by a group of PCBs and sent to the video controller and other external devices. Each PCB has the following functions:

a. Image Processor Motherboard (provided as standard)
   Relays video signals.

b. Image Processor PCB (provided as standard)
   Processes video signals (basic processing; excluding area processing and color editing).

c. ECO PCB (provided as standard)
   Supports the image processor PCB for image processing.

d. IP Memory PCB (provided as standard)
   Compresses and stores images (single A3 page max.).

e. ED Board A1 (option)
   The installation of this PCB enables the following image processing:
   - Framing
   - Blanking
   - Original type selection
   - Gradation
   - Color filter
   - Base color
   - Color conversion
   - Coloring
   - Text processing
   - Texture
   - Special effects
   - Area processing
   - Freehand
   - Text composition

f. Interface Motherboard (provided as standard)
   Relays video signals.

g. Interface Board B1/B2 (option)
   Corrects differences in color space between CLC1000 and IPU or other external device.

h. Preview Monitor Board (option)
   Converts video signals (YMCBk) after image processing into RGB signals for display on a CRT.

The above PCBs are organized as shown in Figure 3-305.

The RGB signals (simultaneously coming as a result of a single scan) from the analog processor PCB are converted into YMC and text signals on the image processor PCB and compressed and temporarily stored on the memory PCB. The memory PCB generates Bk signals based on these YMC and text signals.

The YMCBk signals read from the IP memory PCB are sent to the video controller PCB by way of the image processor PCB.

The ED board A1 processes the image signals from the image processor PCB (area processing, text composition).

The communication with an external device (e.g., IPU, IPU-II) is by way of the interface Board B1/B2 (which also corrects color space).

The Preview Monitor Board converts the YMCBk signals to which all image processing has been made into RGB signals for transmission to the CRT.

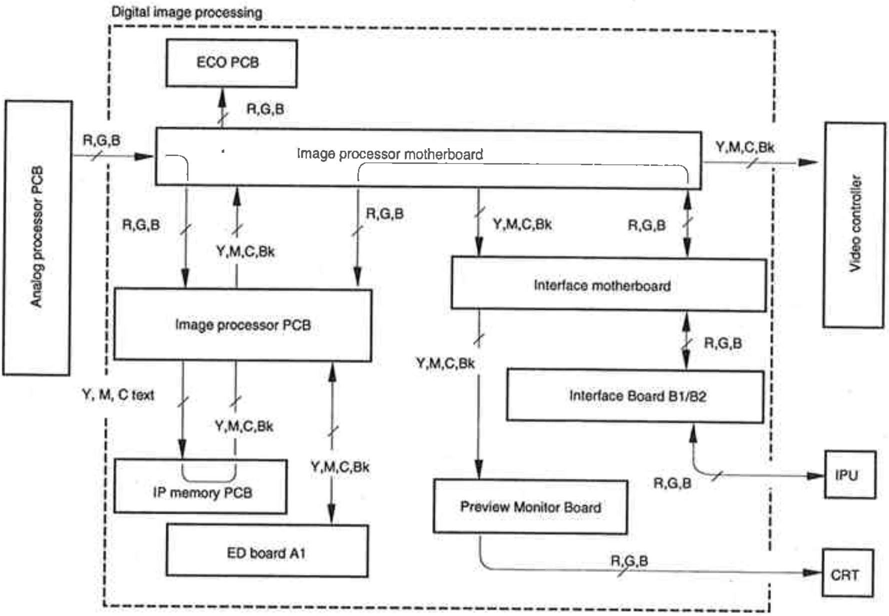
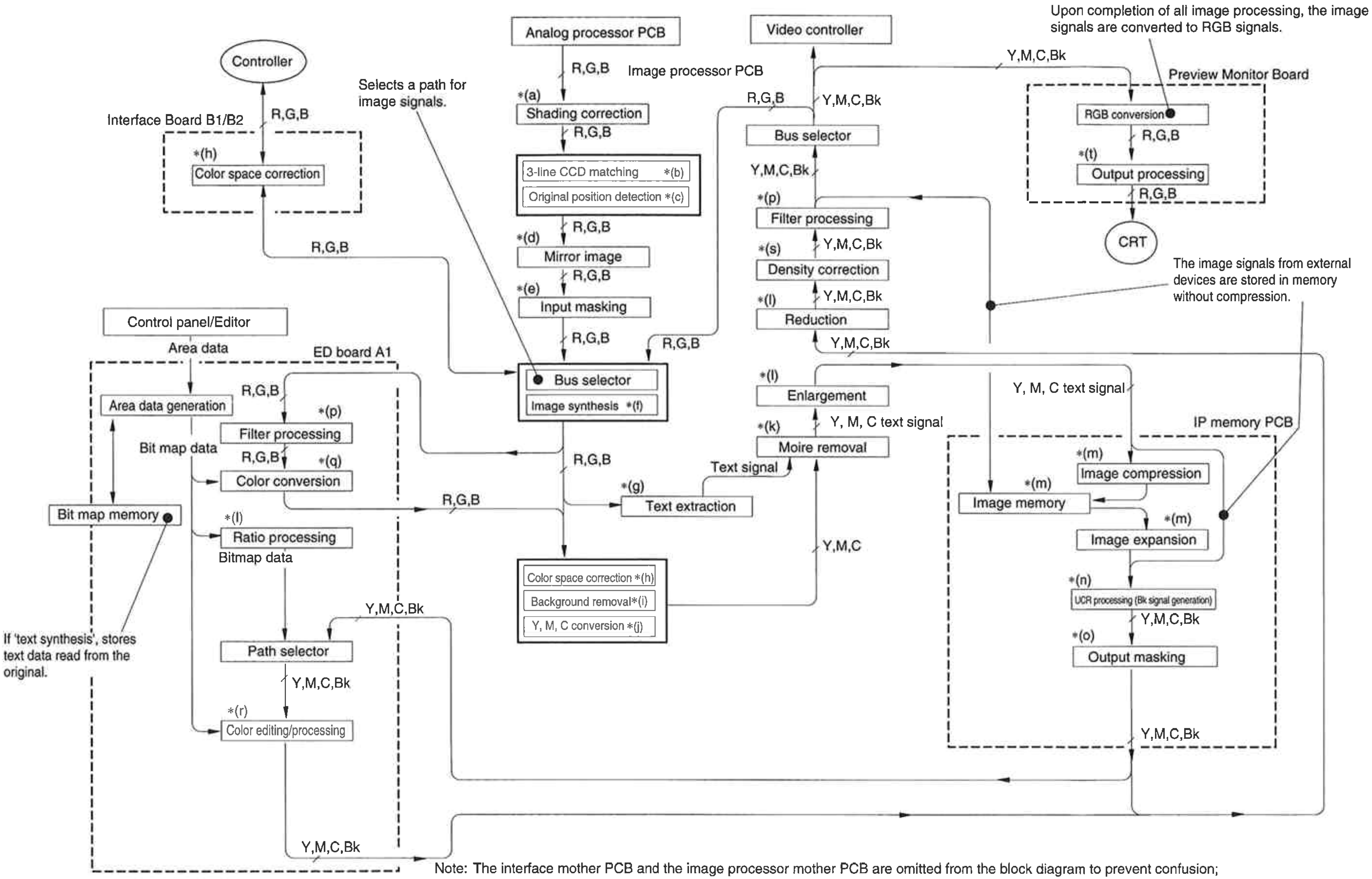

Digital image processing
ECO PCB
R,G,B
Analog processor PCB
R,G,B
Image processor motherboard
Y,M,C,Bk
Video controller
R,G,B
Y,M,C,Bk
R,G,B
Y,M,C,Bk
R,G,B
Interface motherboard
Image processor PCB
R,G,B
Y,M,C,Bk
Y, M, C text
Interface Board B1/B2
Y,M,C,Bk
Y,M,C,Bk
IPU
IP memory PCB
R,G,B
Preview Monitor Board
ED board A1
R,G,B
CRT

Figure 3-305

2. Functional Blocks

Figure 3-306 shows the organization of the PCB functional blocks.


Controller
Interface Board B1/B2
R,G,B
*(h)
Color space correction
R,G,B
Selects a path for image signals.
Analog processor PCB
R,G,B
Image processor PCB
*(a)
Shading correction
R,G,B
3-line CCD matching *(b)
Original position detection *(c)
R,G,B
*(d)
Mirror image
R,G,B
*(e)
Input masking
R,G,B
R,G,B
Bus selector
Image synthesis *(f)
R,G,B
*(g)
Text extraction
Text signal
Color space correction *(h)
Background removal*(i)
Y, M, C conversion *(j)
Video controller
R,G,B
Y,M,C,Bk
Bus selector
Y,M,C,Bk
*(p)
Filter processing
*(s)
Y,M,C,Bk
Density correction
*(l)
Y,M,C,Bk
Reduction
Y,M,C,Bk
*(l)
Enlargement
*(k)
Y, M, C text signal
Moire removal
Y,M,C
Upon completion of all image processing, the image signals are converted to RGB signals.
Y,M,C,Bk
Preview Monitor Board
RGB conversion
R,G,B
*(t)
Output processing
R,G,B
CRT
The image signals from external devices are stored in memory without compression.
Y, M, C text signal
IP memory PCB
*(m)
Image compression
*(m)
Image memory
*(m)
Image expansion
*(n)
UCR processing (Bk signal generation)
Y,M,C,Bk
*(o)
Output masking
Y,M,C,Bk
Control panel/Editor
Area data
ED board A1
Area data generation
R,G,B
*(p)
Filter processing
Bit map data
R,G,B
*(q)
Color conversion
R,G,B
Bit map memory
*(l)
Ratio processing
Bitmap data
Y,M,C,Bk
Path selector
Y,M,C,Bk
*(r)
Color editing/processing
Y,M,C,Bk
If 'text synthesis', stores text data read from the original.

Note: The interface mother PCB and the image processor mother PCB are omitted from the block diagram to prevent confusion; blocks with the * mark are explained on pages that follow.

Figure 3-306

a. Shading Correction

The output of the CCD is not always the same for the following reasons; this is true even if the original has a uniform density:

- The sensitivities of the pixels of the CCD are not the same.
- The degree of transmission of the lens differs between the center and the periphery.
- The intensity of the scanning lamp differs between the middle and the edges.
- The scanning lamp deteriorates.

To compensate for the above discrepancies, the CLC1000 executes shading correction:

- Procedure of shading correction.

a) The CCD reads the bar code under the standard white plate and determines the correction target value. (See Reference.)

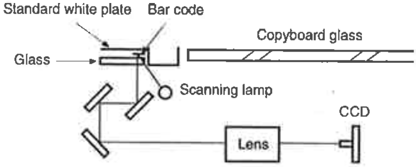

Standard white plate
Bar code
Copyboard glass
Glass
Scanning lamp
CCD
Lens

Figure 3-307

b) The CCD measures the light reflected by the standard white plate and generates data representing the measurement.

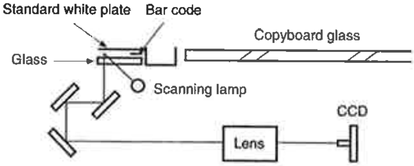

Standard white plate
Bar code
Copyboard glass
Glass
Scanning lamp
CCD
Lens

Figure 3-308

c) The shading correction circuit compares the measurement data (step b) against the target value (step a) and stores the difference in memory as the shading correction value.

The shading correction value is used to obtain uniform data values when scanning originals.

Measurements are taken each time the Start key is pressed.

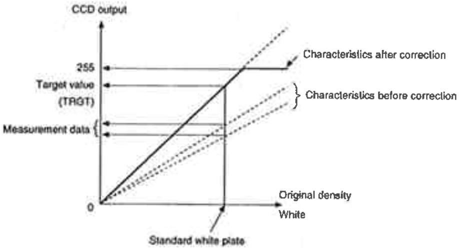


Figure 3-309

REF.

1. A bar code label is attached to the machine's standard white plate. At the factory, light of a specific intensity is directed to each standard white plate, and the reflected light (values of B, G, and R) is measured; the measurements are then converted to bar code notations.
   During copying, the machine reads the bar code to identify the degree of "white" of the standard white plate before executing shading. The presence of the bar code has eliminated the calibration plate used in the past models.
2. The color balance of light areas may be adjusted using 'OFST' under 'COL-ADJ'.
3. If the density or the color balance cannot be corrected with a base film for copying of negative film, make adjustments using 'NEGA' under 'PRJ-ADJ'.
4. The presence of scratches or dirt on the standard white plate will increase the effects of shading correction over the affected areas, causing vertical white lines on the copies.
   If such a problem cannot be corrected after cleaning the standard white plate, you may change the position of shading correction using 'ADJ-S' under 'ADJ-XY' in service mode.

b. 3-Line CCD Position Matching

The machine's CCD consists of three independent CCDs covered with either a R, G, or B filter. For this reason, the line image generated by each CCD at a given point in time has a discrepancy of about 0.5 mm (8 lines) in sub scanning direction in relation to the copyboard glass.

To correct such discrepancies, the R and G image signals are temporarily stored in line memory first and transmitted after they are synchronized with the B image signals.

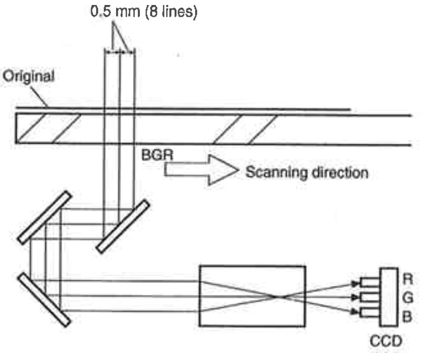


Figure 3-310

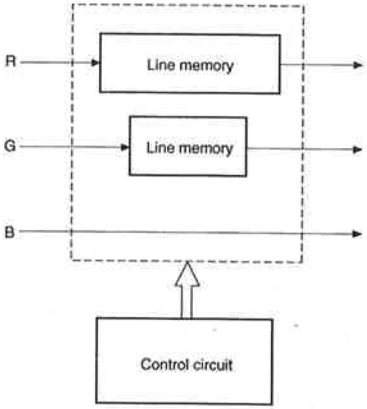


Figure 3-311

REF.

The delay in B image signals is maximum at 400% enlargement; in other words, the R image signals are delayed for 64 lines, and the G image signals are delayed for 32 lines.
For instance, at 320% enlargement, the R image signals must be delayed by 51.2 lines; in such a case, the following correction is made using data representing adjacent pixels:
51.2nd line pixel data = 0.8 × (51st line image data) + 0.2 × (52nd line pixel data)

c. Original Position Identification

The size of an original and its position on the copyboard are identified.

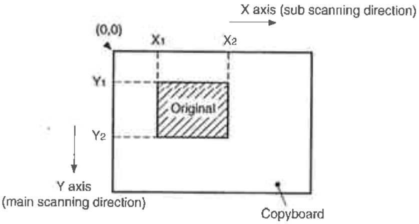

X axis (sub scanning direction)
(0,0)
X1
X2
Y1
Y2
Original
Y axis
(main scanning direction)
Copyboard

Figure 3-312

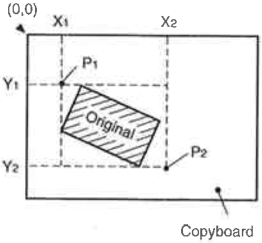

(0,0)
X1
X2
P1
Y1
Original
P2
Y2
Copyboard

Figure 3-313

Figure 3-312 shows when a rectangular original is placed along the X axis (sub scanning direction) and along the Y-axis (main scanning direction) on the copyboard. Figure 3-313 shows an original placed askew.

The underside of the copyboard cover is mirror-finished (preventing refraction of light) instead of coated white as in the case of conventional copiers so that only the area where there is an original reflects the light of the scanning lamp to the CCD.

• Area with an original

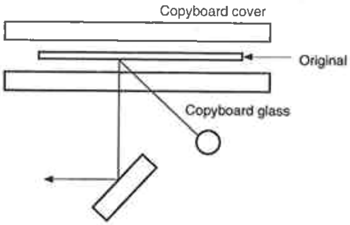

Copyboard cover
Original
Copyboard glass

Figure 3-314

• Area without an original

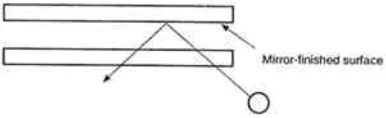

Mirror-finished surface

Figure 3-315

In general, most originals are white paper so that the area identified as being white during scanning can be assumed to represent an original.

In other words, a rectangle (or square) whose diagonal line runs between coordinates Xmin/Ymin and Xmax/Ymax is identified as an original.

If an original is placed at an angle as in the case of Figure 3-313, the rectangle whose diagonal line runs between P_1 and P_2 will be identified as an original.

REF.

1. Xmin ...... Stores the coordinate where black changes to white first.
2. Xmax ..... Stores the coordinate where white changes to black last.
3. Ymin ...... Stores the coordinates nearest the start of the main scanning line where black changes to white.
4. Ymax ..... Stores the coordinates farthest from the start of the main scanning line where white changes to black.

The position and the size of an original are automatically identified to enable automatic ratio selection, automatic paper selection, and image shifts.

If the RF is installed and an original is placed on the copyboard, original position identification cannot be executed.

d. Mirror Image Processing

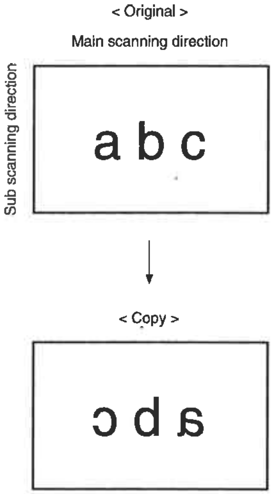

< Original >
Main scanning direction
Sub scanning direction
a b c
< Copy >
ɔ d ɒ

Figure 3-316

Principle

When reading data from the RAM for a single scan, reading is executed in reverse to create a mirror image in relation to the main scanning direction.

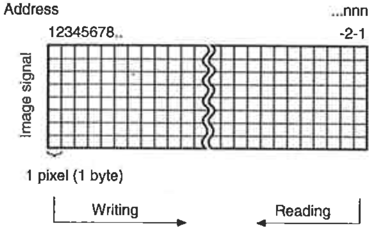

Address
12345678..
...nnn
-2-1
Image signal
1 pixel (1 byte)
Writing
Reading

Figure 3-317

e. Input Masking

When light reflected by an original is separated into three colors by color separation filters (RGB), it would be ideal if each filter let through light of a specific range of wavelengths and blocked out light of other wavelengths.

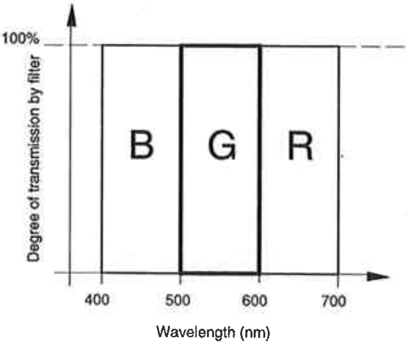


Figure 3-318

In reality, however, filters tend to pass light of various wavelengths. In the case of the G filter, excess B and R components are present while the G component is not always adequate.

In this block, excess image components are removed from the RGB image signals and the shortage is compensated for so as to bring the characteristics closer to the ideal characteristics.

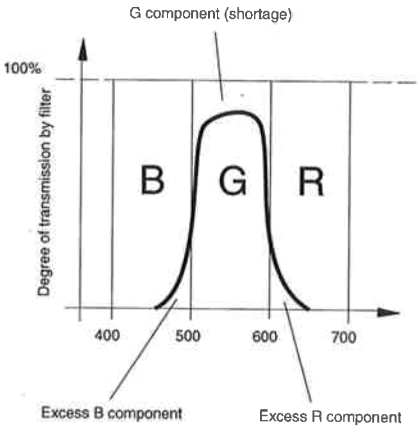


Figure 3-319

f. Image Composition

In this block, two units of image data (RGB signals) read by the scanner are integrated. Such integration may be any of the following; for details, see the User's Manual:

- Patch integration
- Full integration
- Area integration

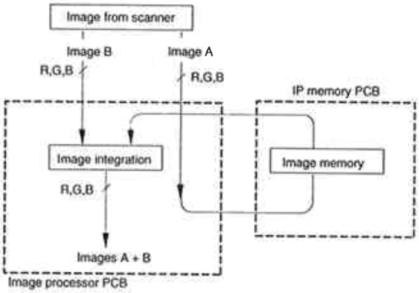


Image from scanner
Image B
Image A
R,G,B
R,G,B
IP memory PCB
Image integration
Image memory
R,G,B
Images A + B
Image processor PCB

Figure 3-320

In the case of full integration, image A, which has been read by the scanner first, is stored in the image memory first and integrated with image B, which has been read next. If image A is used as the background and image A is specified as the area, image A, which has been read first, is stored in the image memory on the IP memory PCB and processed on the ED board by the area data from the control panel/editor and then integrated with image B.

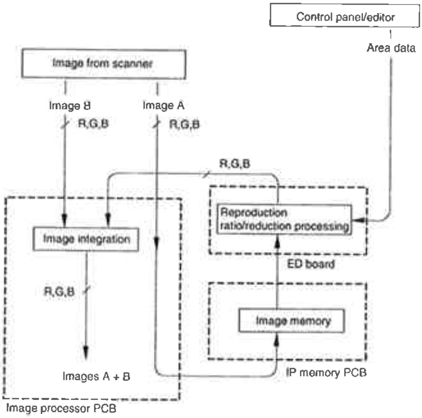

Control panel/editor
Area data
Image from scanner
Image B
Image A
R,G,B
R,G,B
R,G,B
Reproduction ratio/reduction processing
ED board
Image integration
R,G,B
Image memory
Images A + B
IP memory PCB
Image processor PCB

Figure 3-321

g. Text Extraction

In this block, text is extracted from an image to generate text signals (representing thickness of lines and hue data). Executing UCR processing based on such text signals enables reproduction of naturally emphasized edges and fine, black lines.

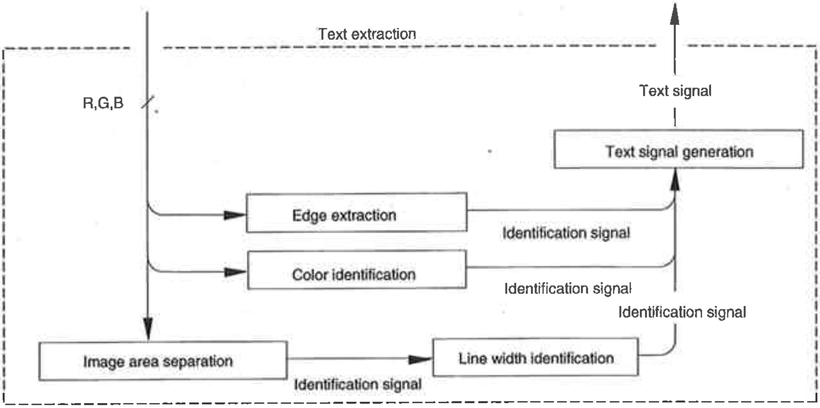

Text extraction
R,G,B
Text signal
Text signal generation
Edge extraction
Identification signal
Color identification
Identification signal
Identification signal
Image area separation
Line width identification
Identification signal

Figure 3-322

Text signals consist of the following elements:

1. Image Area Separation
   In this block, shaded areas and continuous density areas of an image are distinguished, enabling reproduction of naturally emphasized edges in dotted areas.
2. Line Width Identification
   In this block, the width of the area (text) to which a specific pixel belongs is identified, thereby enabling reproduction of naturally emphasized edges suited to the thickness of characters.
3. Edge Detection
   In this block, the position of a specific pixel is identified as being or not being along the edge of a character through comparison against adjacent pixels.
4. Color Identification
   In this block, the hue of a specific pixel is identified. The result of identification may be black, or other color.

The Bk signal (explained later) is generated based on the above characteristics.

h. Color Space Correction

The range of possible color reproduction is wider with photo originals and computer-generated originals than with color printers.

In the conventional method shown in Figure 3-323, colors (point a, point b) falling within the printer's color reproduction range are reproduced faithfully; however, a color (point c) outside the range is not reproduced properly, resulting in a discrepancy in gradation between original and output images.

The CLC1000 has a good understanding of the color space (hue, brightness, vividness) that can be reproduced by the printer. It checks the RGB data read by pre-scanning and processes it so that it can fit the printer's color reproduction range. With this arrangement, the CLC1000 reproduces the gradation of originals much more faithfully than copiers using the conventional method.

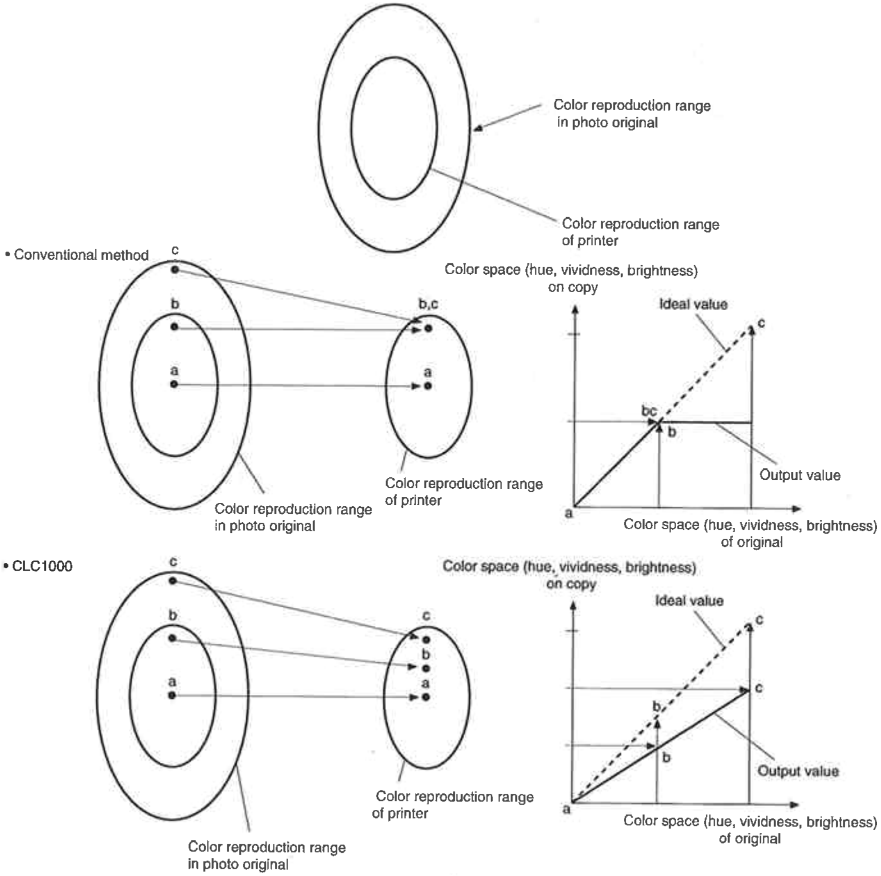

Color reproduction range in photo original
Color reproduction range of printer
• Conventional method
c
b
a
b,c
a
Color reproduction range of printer
Color reproduction range in photo original
Color space (hue, vividness, brightness) on copy
Ideal value
c
bc
b
Output value
a
Color space (hue, vividness, brightness) of original
• CLC1000
c
b
a
c
b
a
Color reproduction range of printer
Color reproduction range in photo original
Color space (hue, vividness, brightness) on copy
Ideal value
c
c
b
b
Output value
a
Color space (hue, vividness, brightness) of original

Figure 3-323

i. Removing the Background (adjusting the background level)

When the CCD reads the light reflected by an original, it also reads the color data of the surface of the paper (background). In this block, the surface of paper (background) is identified for correction of image signals, thereby preventing fogging of white backgrounds and improving reproduction quality.

Pixels are identified as representing the background of an original if they tend to appear most frequently in the sample image data collected during pre-scanning and, in addition, if the level of the R, G, and B signals is 200 or more (Figure 3-324).

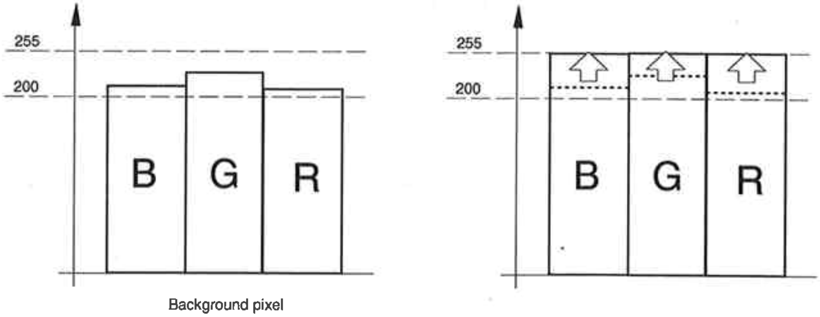


Figure 3-324

"Background level adjustment" in user mode has two sub modes: mode A and mode B, each using a different method of correction.

In mode A, only background pixels are processed; the color of the background is removed by correcting the level of the RGB signal of the pixels to 255.

In mode B, the RGB signals of the background pixels are removed from the image data for the entire image area. This way, the image on the back of the copy is removed if the copy is transparent enough to let the back image show through.

j. Logarithmic Correction and BGR → YMC Conversion

a) Logarithmic Conversion

The CCD output has a linear characteristic in relation to the light reflected by an original. However, the density as perceived by the eye is not linear in relation to the reflected light.

Figure 3-325 shows the relationship between the density of an original and the output of the CCD as perceived by the eye.

To compensate for the discrepancy, level conversion is executed as shown in Figure 3-326.

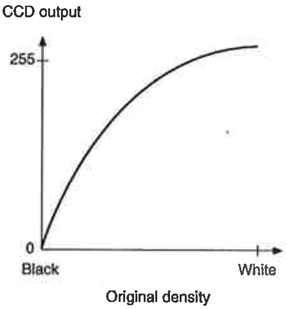


Figure 3-325

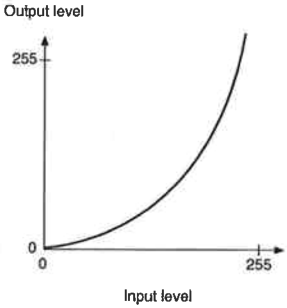


Figure 3-326

b) BGR → YMC Conversion

The circuit generates Y, M, and C signals taking advantage of the fact that B, G, and R (light) are complementary to Y, M, and C (toner).

Light / Toner	Y	M	C
B	Absorbed	Reflected	Reflected
G	Reflected	Absorbed	Reflected
R	Reflected	Reflected	Absorbed

Table 3-301

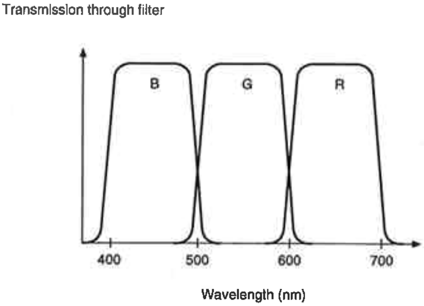


Figure 3-327

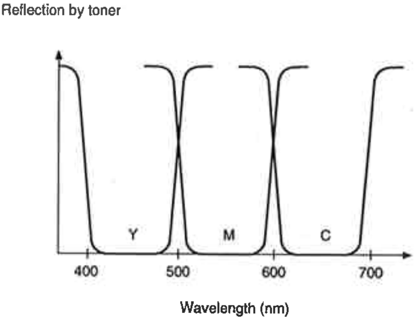


Figure 3-328

The degree of light transmitted by each of the filters of the CCD (B, G, R) and the density (Y, M, C) of an original are in a complementary relationship; level conversion is executed as in Figure 3-329 to generate Y, M, and C signals.

k. Removing Moire

When originals consisting of dots (printed material, for example) are read, moire can occur in the output. This block removes moire from image inputs.

Images consist of patterns of various densities. Areas where dark and light patterns repeat in high density are called high frequency components; on the other hand, areas where dark and light patterns repeat in low density are called low frequency components.

Within image data, the frequency components of dotted areas fall between 5.0 and 7.0 lines/mm; the output gain is lowered for such components, thereby evening out the dotted components and preventing moire (Figure 3-330).

This processing is executed for the dotted areas extracted by the previously discussed text extraction block if the original type is set as "text/ printed photo" or "printed photo."

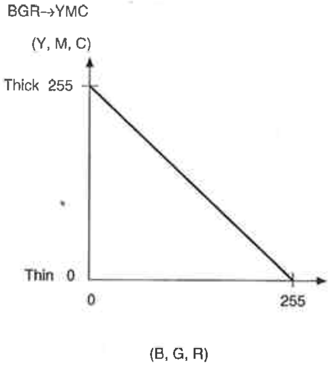


Figure 3-329

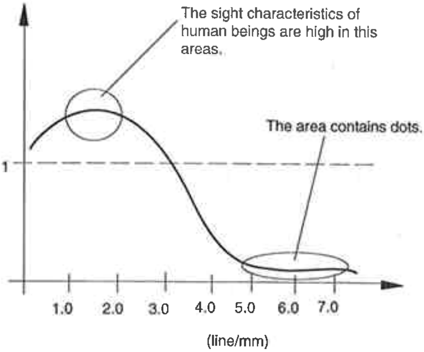


Figure 3-330

I. Reproduction Ratio Processing

a) Reproduction Ratio Processing

1 Horizontal Reproduction Ratio (main scanning direction)
When writing image data into memory or reading image data from memory, data units are skipped when writing (reduction) or are read a number of times when reading (enlargement).

2 Vertical Reproduction Ratio (sub scanning direction)
The scanner is moved at different speeds to change the width of the line, scanning each pixel on the original.
See Table 3-302 for how the ratios are varied.

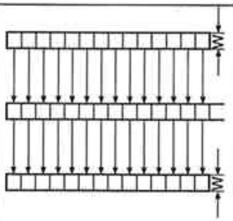
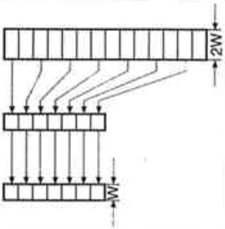
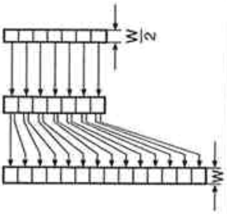
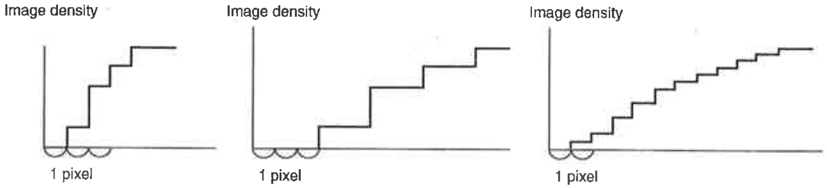
	Direct	Reduction	Enlargement
Original (image data) (writing) Line memory (reading) Copying			
Reproduction ratio in main scanning direction	All data is written in memory as it is and read as it is.	To reduce to 1/2, every other data unit is written in memory.	To enlarge by 200%, all data is written in memory as it is but read twice.
Reproduction ratio in sub scanning direction		The scanner is moved faster to increase the width of the line scanning each pixel on the original.	The scanner is moved at a lower speed to decrease the width of scanning over each pixel on the original.

Table 3-302

b) Enlargement Correction Processing

The image data is corrected so that the difference in density between pixels will not vary excessively when producing enlarged copies.

Figure 3-331 shows image data of an original, image data at time of enlargement, and image data after enlargement correction.



a. Original b. Enlargement at 300% c. After correction

Figure 3-331

m. IP Memory PCB

Since the CLC1000 uses four photosensitive drums, it temporarily stores image signals in image memory.

The image signals (Y, M, C and text signals) from the scanner are sent to the IP memory PCB and compressed to 1/6 the original size and stored in the image memory. The data is read according to the read signal generated in relation to the ITOP signal and sent to the image processor after the UCR processing block has generated the Bk signal.

The image signals from an external device are subjected to UCR processing without compression and sent to the image processor PCB. (For this, the DRAM memory kit must be installed.)

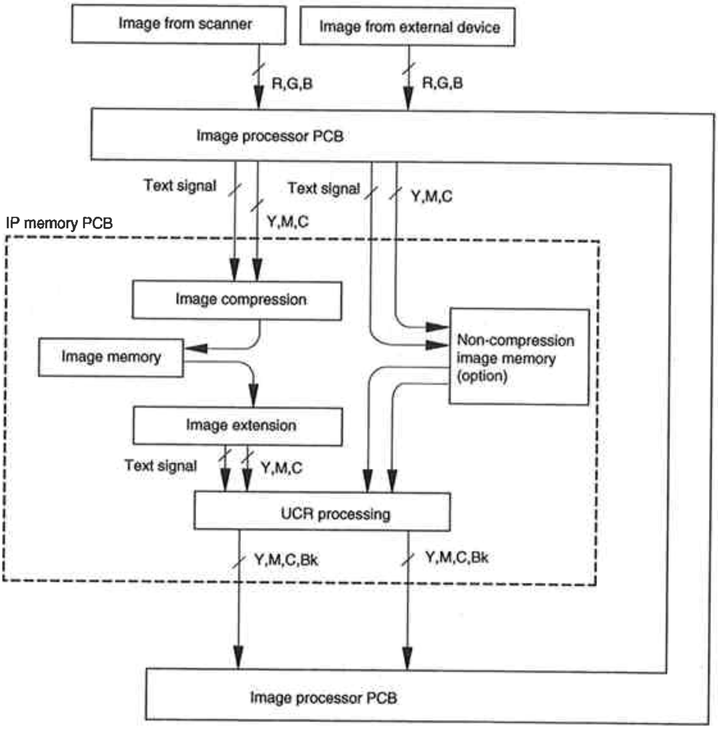


Image from scanner
Image from external device
R,G,B
R,G,B
Image processor PCB
Text signal
Text signal
Y,M,C
Y,M,C
IP memory PCB
Image compression
Image memory
Non-compression image memory (option)
Image extension
Text signal
Y,M,C
UCR processing
Y,M,C,Bk
Y,M,C,Bk
Image processor PCB

Figure 3-332

n. UCR (under color removal) Processing

Theoretically, mixing Y, M, and C toners in equal parts should produce black. However, since neither one of the toners has pure color absorption characteristics*, mixing the three toners representing three colors will not produce pure black.

In this block, the Bk signal is generated based on the Y, M, and C signals and text signal so that the reproduction of black can be improved by the addition of the Bk signal to the Y, M, and C signals.
* See discussions on YMC conversion.

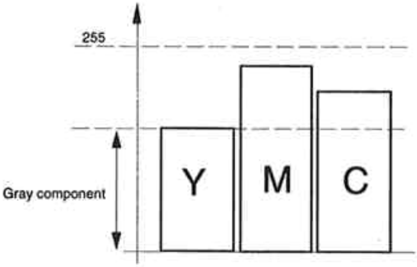


Figure 3-333

The Bk signal is generated as follows:

The gray components of the YMC signals are as indicated in Figure 3-333.

These gray components are removed and replaced with the Bk signal. The replacing component used here is called an UCR amount, and in the case of Figure 3-334, the UCR amount is 100%. In such a case, Bk toner will be added to all density areas, possibly causing fogging in light areas.

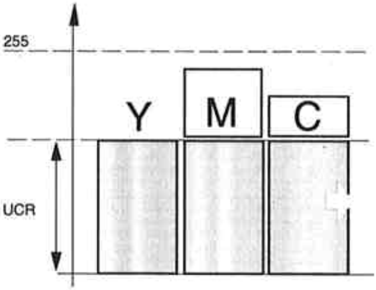


Figure 3-334

As a remedy, the UCR amount is increased or decreased with reference to the text signal, thereby limiting the UCR amount to less than 100%. This processing is executed for each pixel.

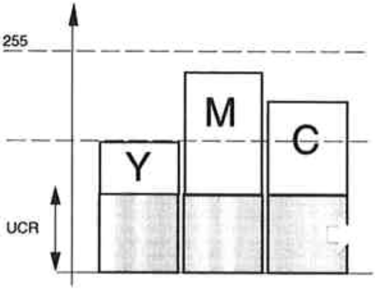


Figure 3-335

o. Output masking

A color image is reproduced by color toners with Y toner absorbing the B component, with M toner absorbing the G component, and with C toner absorbing the R component.

However, in practice, the toners do not have pure color absorption characteristics as shown in Figure 3-336. In general, Y toner tends to have good absorption characteristics, but M toner tends to have undesirable absorption characteristics for the B component; and C toner likewise tends to have undesirable absorption characteristics for the G and the B components (segments enclosed in Figure 3-336). In other words, M toner if left as it is would tend to have color reproduction characteristics that include the Y component, and C toner would have color reproduction characteristics that include the M and the Y components.

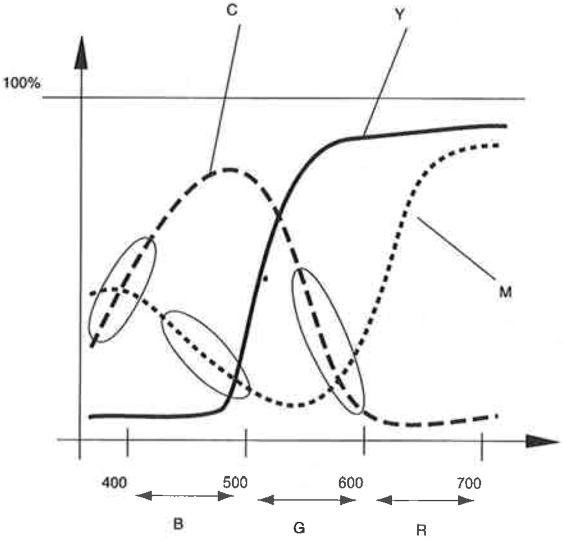


Figure 3-336

For this reason, reproduction of red by mixing Y toner and M toner would produce a yellowish red because of the Y component of M toner. Real red could be reproduced by removing the Y component from M toner (masking) in advance. This block makes such correction by masking the excess component in each toner.

p. Filter Processing

In this block, computations are made so that a crisp or soft image may be obtained to suit the settings of copying mode or sharpness mode selected on the control panel.

If image data shown in Figure 3-337 is input, the output level will be as shown in Figure 3-338 with sharpness set to "weak."

Setting sharpness to "weak" will smooth changes in the density of images, making the copy image soft.

And if image data shown in Figure 3-337 is input, the output level will be as shown Figure 3-339 with sharpness set to "strong".

Setting sharpness to "strong" will emphasize changes in the density of images, making the copy images crisp.

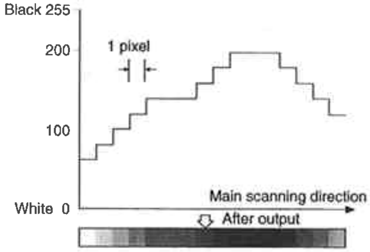


Figure 3-337 Input Level

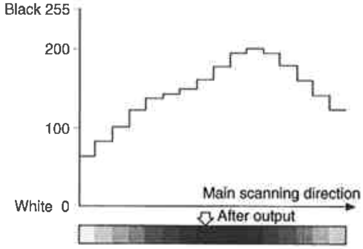


Figure 3-338 Sharpness Mode Set to Weak

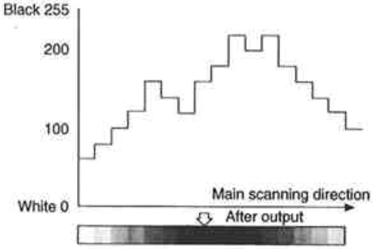


Figure 3-339 Sharpness Mode Set to Strong

q. Color Conversion

In this block, a specific color of an original is converted into a different color. (For details, see the User's Manual.)

When an area is selected on the editor, bit map data will be generated based on area data to determine which pixels of the image should be corrected. In addition, if a registered color has been selected by a color palette, color data will be read from the bit map memory to represent the selected pixels on the image.

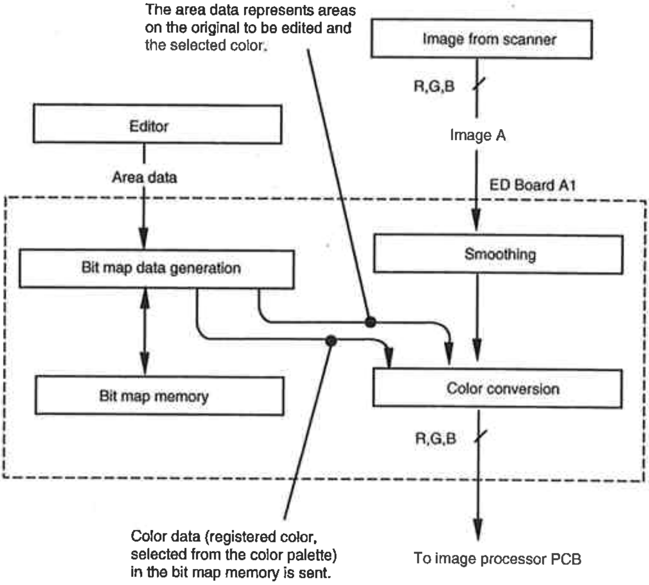

The area data represents areas on the original to be edited and the selected color.
Image from scanner
R,G,B
Image A
Editor
Area data
ED Board A1
Smoothing
Bit map data generation
Bit map memory
Color conversion
R,G,B
Color data (registered color, selected from the color palette) in the bit map memory is sent.
To image processor PCB

Figure 3-340

r. Color Editing

This block executes the following color editing:

- Gradation
- Color filter
- Base color
- Coloring
- Special effect
- Text composition

Except in "text composition," bit map data is generated based on the mode data (pattern and color of gradation or area) selected on the control panel and integrated with image A, which has been read by the scanner.

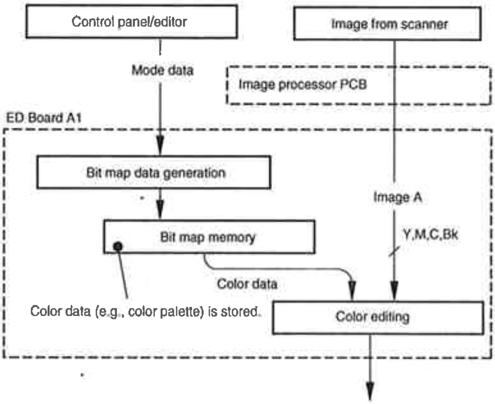

Control panel/editor
Image from scanner
Mode data
Image processor PCB
ED Board A1
Bit map data generation
Image A
Bit map memory
Y,M,C,Bk
Color data
Color data (e.g., color palette) is stored.
Color editing

Figure 3-341

In the case of "text composition," image A, which has been read by the scanner, is converted into binary data by the ED Board A1; then, bit map data is generated based on the area data. The bit map data is temporarily stored in the bit map memory and integrated with image B, which has been read next.

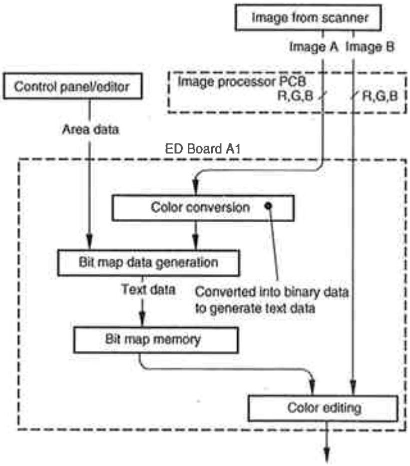


Image from scanner
Image A
Image B
Control panel/editor
Image processor PCB
R,G,B
R,G,B
Area data
ED Board A1
Color conversion
Bit map data generation
Text data
Converted into binary data to generate text data
Bit map memory
Color editing

Figure 3-342

s. Density Processing

The correction curve for density processing varies depending on the following:

a. Density key (control panel)
b. Color balance (control panel)
c. Color balance (service mode; COL-ADJ)
d. Light area offset adjustment (service mode; OFST under COL-ADJ)
e. Text/photo mode

As indicated in Figure 3-343, either a dark or light curve will be selected to suit the settings of items from a. through d.

If text mode is selected for item e., a curve that enables reproduction of dark text without risking fogging will be selected (Figure 3-344).

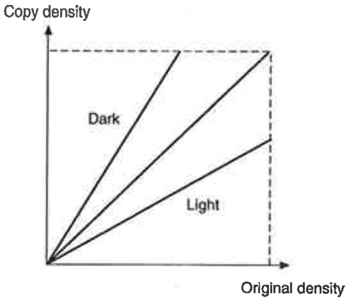


Figure 3-343

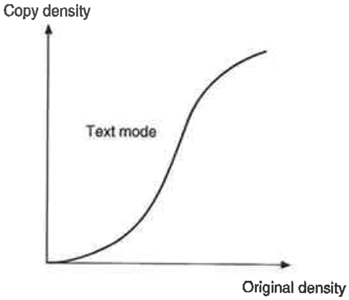


Figure 3-344

t. Monitor Controller PCB

In this block, the final image data (YMCBk) is converted into RGB data for display on the CRT.

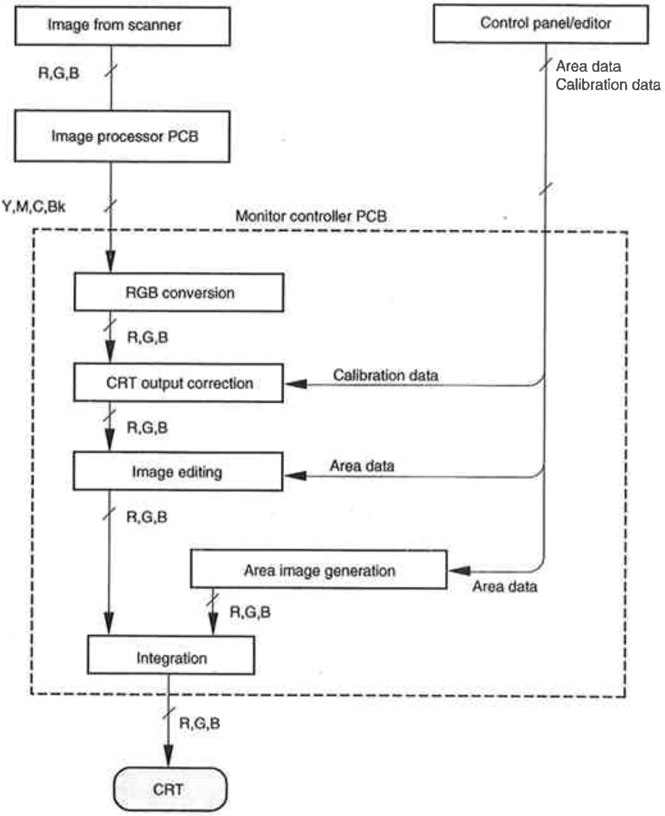


Image from scanner
R,G,B
Image processor PCB
Y,M,C,Bk
Control panel/editor
Area data
Calibration data
Monitor controller PCB
RGB conversion
R,G,B
CRT output correction
Calibration data
R,G,B
Image editing
Area data
R,G,B
Area image generation
Area data
R,G,B
Integration
R,G,B
CRT

Figure 3-345

The CRT output correction block corrects image data using the calibration data entered from the control panel. The calibration serves to bring the printing output and the display image (on the CRT) closer to each other by varying the image density signals.

In the image editing block, the image (data) is rotated, shifted, or enlarged as specified on the control panel.

The area image generation block generates image data for such items as an area frame to be displayed on the CRT; the initial data and the post-edit data are integrated and displayed on the CRT.

IV. LASER EXPOSURE SYSTEM

A. Outline

The laser exposure system consists of a laser unit, which is the source of laser beams, a laser scanning unit, which performs laser scanning (main scanning direction) using a polygon (8-facet) mirror, and a BD detection PCB, which generates sync signals for scanning direction.

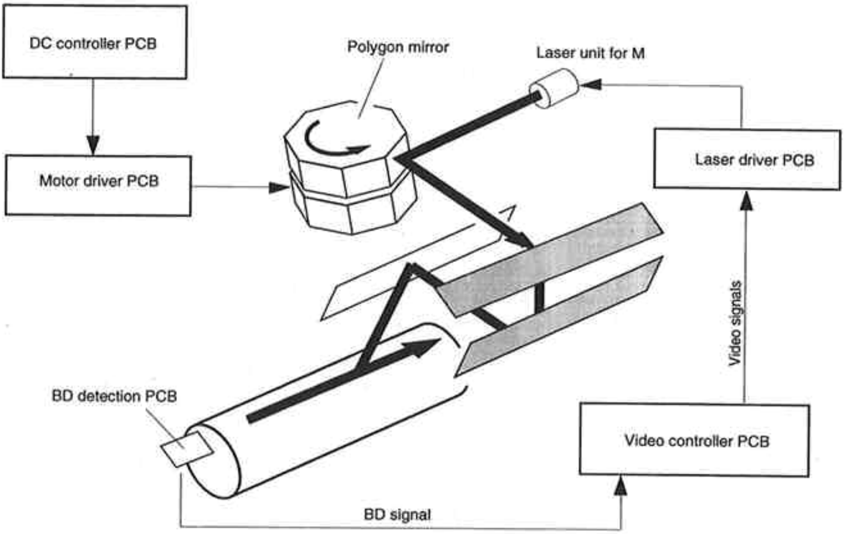

DC controller PCB
Polygon mirror
Laser unit for M
Motor driver PCB
Laser driver PCB
Video signals
BD detection PCB
Video controller PCB
BD signal

Figure 3-401

The video signals (for M in Figure 3-401), which is synchronized for main and sub scanning directions by the video controller, are converted by the laser driver into laser drive signals that represent the level of the signals. The laser beam is generated by the laser unit using this laser drive signal. The laser beam comes to have scanning characteristics in a specific direction because of the polygon mirror, which rotates at a high speed. The laser beam hits and scans the negatively charged photosensitive drum (Figure 3-401) to form a static latent image on the photosensitive drum.

The CLC1000 is equipped with a laser unit for each color (Y, M, C, Bk), each unit directing a laser beam against its corresponding photosensitive drum. The polygon mirror consists of top and bottom blocks, generating four channels of laser beams as shown in Figure 3-402.

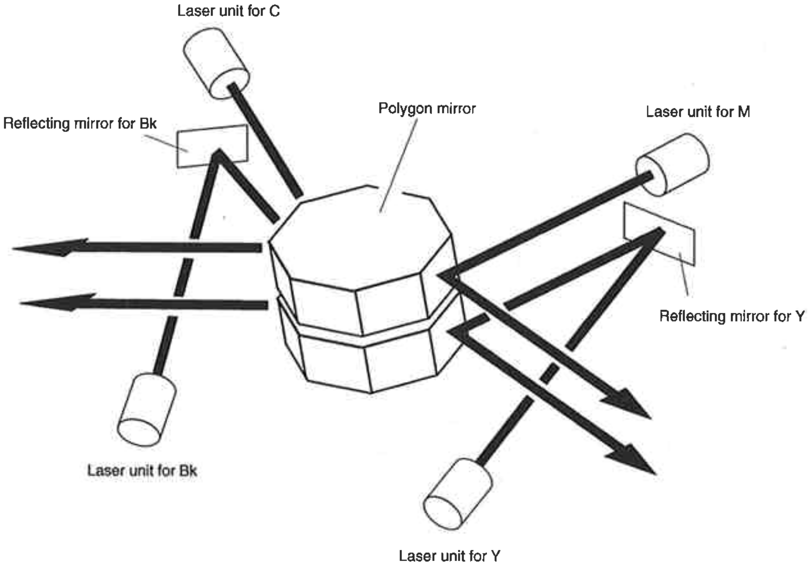

Laser unit for C
Reflecting mirror for Bk
Polygon mirror
Laser unit for M
Reflecting mirror for Y
Laser unit for Bk
Laser unit for Y

Figure 3-402

Since the positions of the laser units and the direction of rotation of the polygon mirror differ for M/Y and C/Bk, the laser beam scans the photosensitive drums in the opposite directions as shown in Figure 3-403.

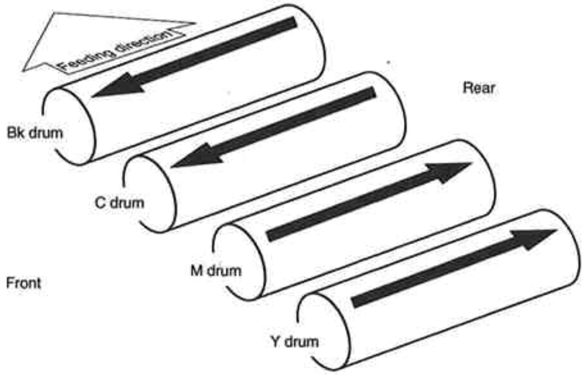

Feeding direction
Rear
Bk drum
C drum
M drum
Y drum
Front

Figure 3-403

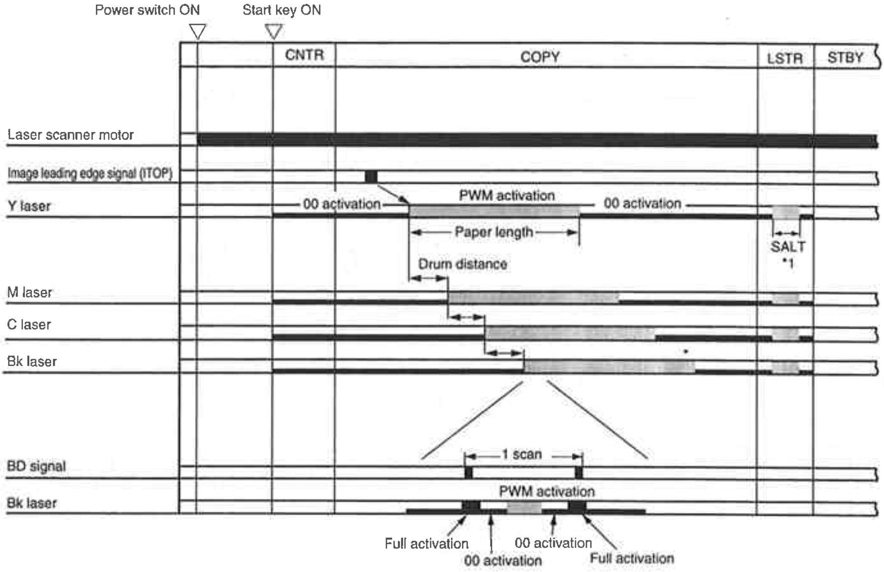
B. Sequence of Operations (laser exposure system)

Figure 3-404 shows the sequence of operations for the laser exposure system.

The laser scanner motor starts to rotate as soon as the power switch is turned on and continues to rotate at a specific speed until the power switch is turned off.

Each semiconductor laser is 00-activated as soon as the Start key is pressed and is PWM-activated in relation to the image leading edge signal to form a latent image on the drum. The PWM activation period is given a delay for each color to make up for the distance between drums.

When the PWM activation for a single scan ends, the laser turns fully for BD signal detection; the next scanning operation starts when the BD signal is generated.


Power switch ON
Start key ON
CNTR
COPY
LSTR
STBY
Laser scanner motor
Image leading edge signal (ITOP)
Y laser
00 activation
PWM activation
00 activation
Paper length
SALT
*1
Drum distance
M laser
C laser
Bk laser
1 scan
BD signal
Bk laser
PWM activation
Full activation
00 activation
00 activation
Full activation

(*1) if only executed SALT control

Figure 3-404

C. Laser Scanner Motor

The laser scanner motor (M4) is a DC motor, and the motor starts to rotate at a specific speed when the laser scanner motor drive signal (SMON*) goes '0'. If the rotation speed of the motor is at a specific value, the laser scanner motor ready signal (SMRDY*) goes '0', indicating to the DC controller that the condition is normal; if the rotation speed of the motor deviates because of an error, SMRDY* goes '1', displaying error code 'E110' on the control panel.

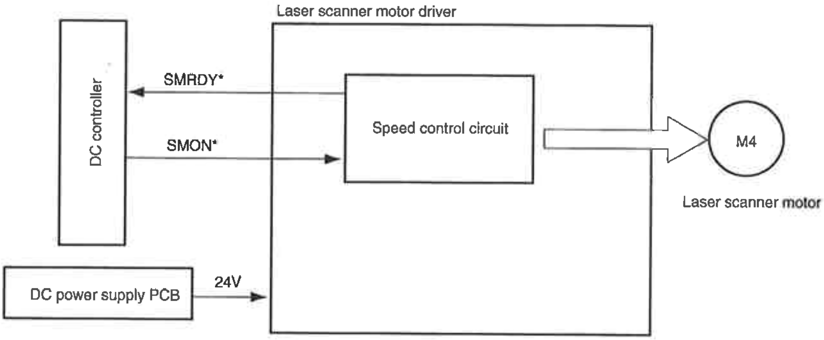

Laser scanner motor driver
DC controller
SMRDY*
SMON*
Speed control circuit
M4
Laser scanner motor
DC power supply PCB
24V

Figure 3-405

D. Generating the BD Signal

The BD signal is used to synchronize video signals (for the main scanning direction of the laser beam). The laser beam reflected by the BD mirror located in the optical path of the beam is detected by the BD detection PCB, and the detection signal is used to generate the BD signal. As can be learned from Figure 3-406, as many as four BD detection PCBs are used to deal with the four colors and the BD signal is generated for each channel.

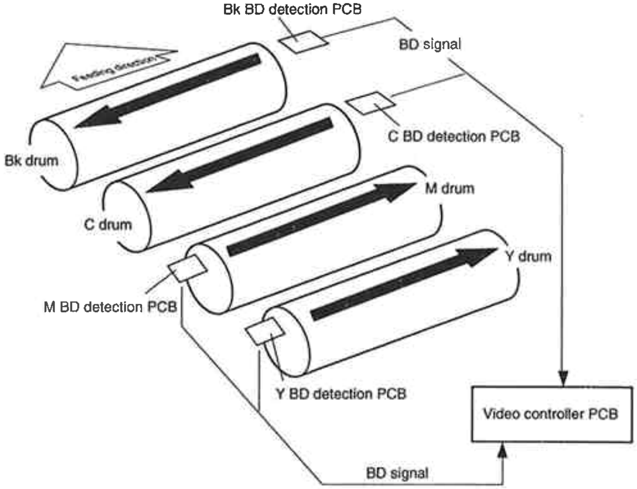

Bk BD detection PCB
BD signal
Feeding direction
C BD detection PCB
Bk drum
M drum
C drum
Y drum
M BD detection PCB
Y BD detection PCB
Video controller PCB
BD signal

Figure 3-406

In reference to the BD signal for each color, the video signal is synchronized for the main scanning direction on the video controller PCB (details follow) and sent to the laser driver PCB.

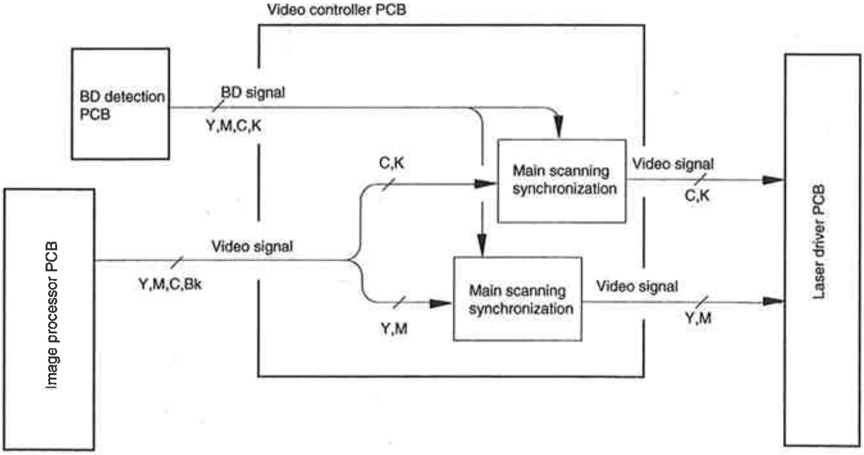

Video controller PCB
BD detection PCB
BD signal
Y,M,C,K
C,K
Main scanning synchronization
Video signal
C,K
Laser driver PCB
Image processor PCB
Video signal
Y,M,C,Bk
Main scanning synchronization
Video signal
Y,M
Y,M

Figure 3-407

E. Video Controller

1. Outline

Figure 3-408 shows the video controller PCB, which controls the synchronization of video signals from the image processor PCB and sends the video signals to the laser driver; the main functions of the circuits are as follows:

1 Generates clock signals for synchronization control.
2 Controls synchronization in main/sub scanning direction.
3 Corrects density.
4 Counts video data units.
5 Generates image patterns.

Each of the Y, M, C, and Bk video signals compressed and stored on the IP memory PCB is read in sync with the ITOP signal (image leading edge signal) and sent to the video controller PCB through the image processor PCB. (See "Synchronization Control in Main/Sub Scanning Direction.")

The video signals are then synchronized for the sub scanning direction based on the ITOP signal and are subjected to gamma correction based on the conversion table in the density correction RAM. (See "Density Correction.")

Of the video signals after density correction, the Y and the M signals are sent to a special memory for synchronization in the main scanning direction. Since the main scanning direction for the C and the Bk video signals are opposite that of the Y and the M video signals, the writing direction is reversed before transmission to the memory for synchronization in the main scanning direction. The synchronization for the main scanning direction is by clock signals generated based on the BD signals. (See "Synchronization Control for Main/Sub Scanning Direction.")

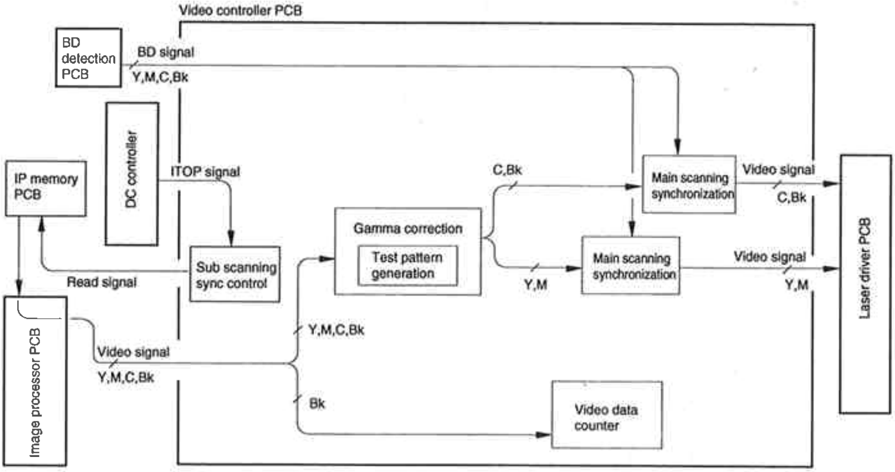

Video controller PCB
BD detection PCB
BD signal
Y,M,C,Bk
DC controller
ITOP signal
IP memory PCB
Read signal
Sub scanning sync control
Gamma correction
Test pattern generation
C,Bk
Y,M
Main scanning synchronization
Video signal
C,Bk
Main scanning synchronization
Video signal
Y,M
Laser driver PCB
Image processor PCB
Video signal
Y,M,C,Bk
Y,M,C,Bk
Bk
Video data counter

Figure 3-408

2. Synchronization Control for the Main/Sub Scanning Direction

The video signals are synchronized for the main scanning direction based on the BD signal by the video controller. The video signal after gamma correction is written to the memory for main scanning direction synchronization in response to the main scanning sync signal (HSYNC*) based on the write BD signal (WBD). At this time, writing is enabled by the write enable signal (WE*), and the same timing is used for Y, M, C, and Bk.

Reading from the memory for the main scanning direction is executed based on the BD signal for Y, M, C, and Bk. In the sample shown in Figure 3-410, the Y main scanning sync signal (YSYNC*) is generated in sync with the Y BD signal (YBD); the read enable signal (YRE*) is generated after a specific period of time* following the generation of YSYNC; and the Y video signals are read from the memory for the main scanning direction.

*May be changed; used for image position correction explained later.

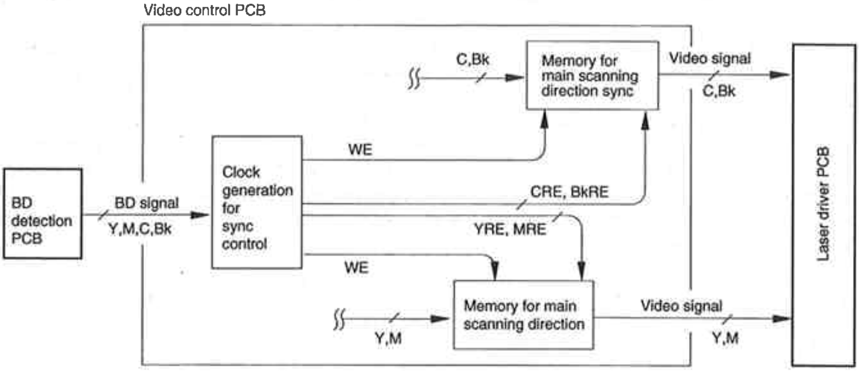

Video control PCB
C,Bk
Memory for main scanning direction sync
Video signal
C,Bk
WE
Clock generation for sync control
BD detection PCB
BD signal
Y,M,C,Bk
CRE, BkRE
YRE, MRE
WE
Laser driver PCB
Memory for main scanning direction
Y,M
Video signal
Y,M

Figure3-409

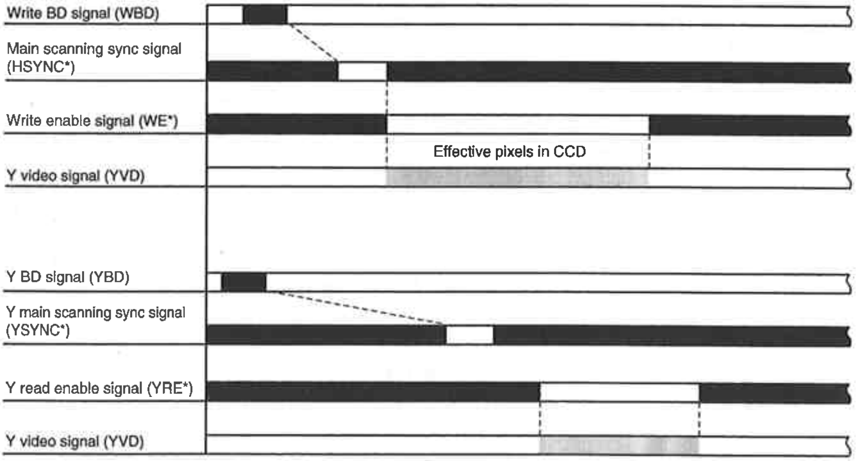


Figure 3-410

The video signals are synchronized for the sub scanning direction by the video controller based on the image leading edge signal (ITOP). The ITOP signal is triggered by the output of the transfer belt home position sensor, and the timing of output varies according to paper size. When the ITOP signal is generated, the read enable signal for each color (YMRE in the case of Figure 3-411) causes the video signals (YMCBk) to be read from the page memory area for transmission to the video controller. (As can be learned from the timing chart, the read enable signal for each color is given a delay for the distance between drums.)

The video signal is forced to remain '0' until the print area signal (YFRM in Figure 3-411) is generated, thereby creating a leading edge margin.

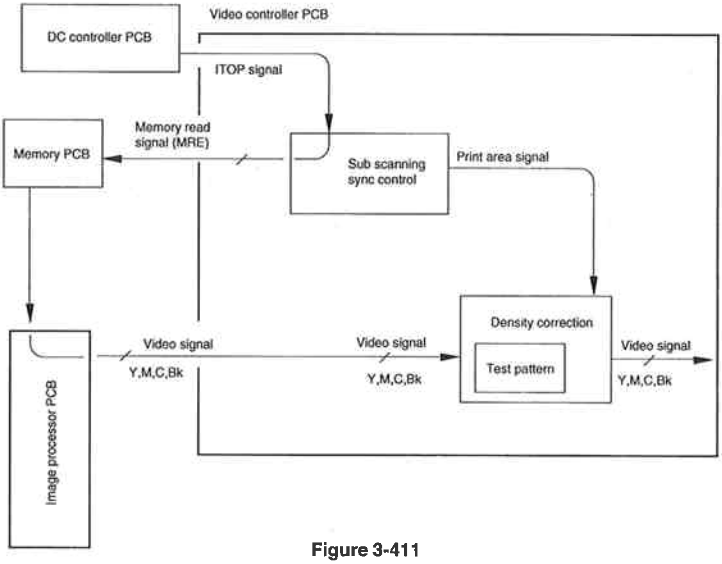

DC controller PCB
Video controller PCB
ITOP signal
Memory read signal (MRE)
Memory PCB
Sub scanning sync control
Print area signal
Density correction
Test pattern
Video signal
Y,M,C,Bk
Video signal
Y,M,C,Bk
Video signal
Y,M,C,Bk
Image processor PCB

Figure 3-411

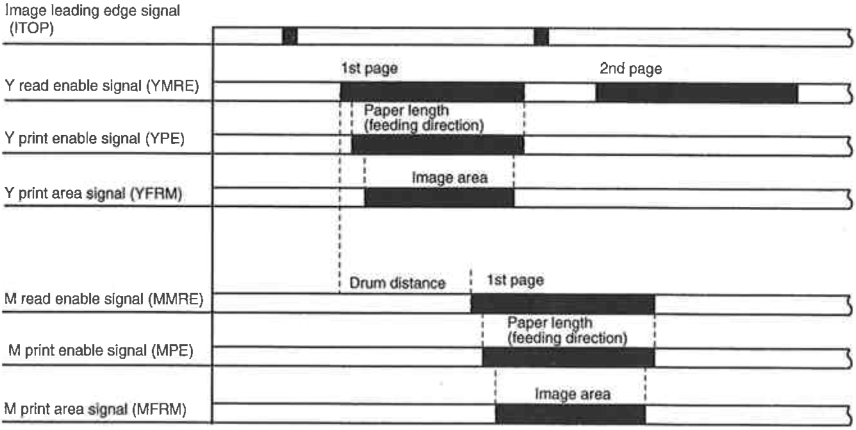


Image leading edge signal (ITOP)
Y read enable signal (YMRE)
1st page
2nd page
Paper length (feeding direction)
Y print enable signal (YPE)
Image area
Y print area signal (YFRM)
Drum distance
1st page
M read enable signal (MMRE)
Paper length (feeding direction)
M print enable signal (MPE)
Image area
M print area signal (MFRM)

Figure 3-412

3. Density Correction

The relationship between video signals and image densities is as shown in Figure 3-413. As can be learned, using the video signals as they are for laser exposure will not result in the faithful reproduction of image densities.

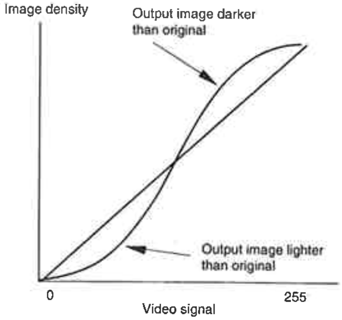


Figure 3-413

To ensure that the image density will be reproduced throughout the entire range of the video signals, the video signals are converted along the correction curve (Figure 3-414), thereby bringing the output characteristics closer to the ideal characteristics.

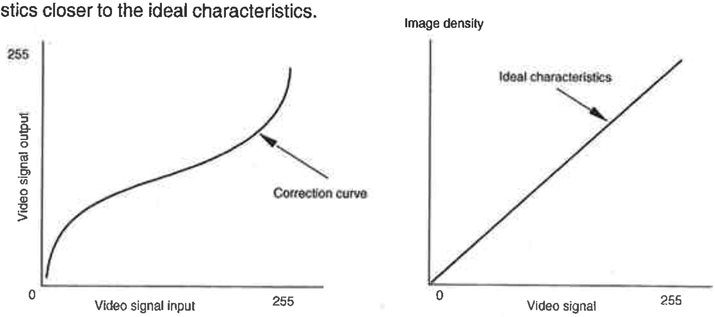


Figure 3-414

The correction curve for conversion is stored in the density correction RAM on the video controller in relation to the data for SALT and PASCAL*.

*See chapter 3. V. IMAGE FORMATION SYSTEM, C. Stabilizing Image.

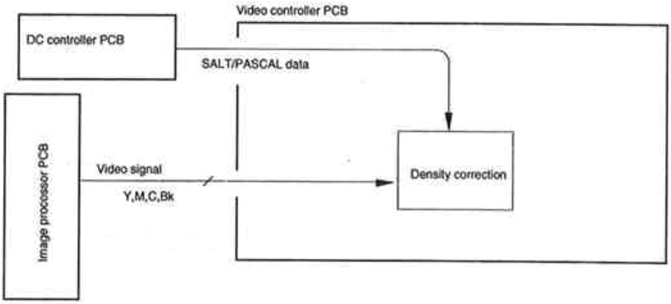

Video controller PCB
DC controller PCB
SALT/PASCAL data
Image processor PCB
Video signal
Y,M,C,Bk
Density correction

Figure 3-415

The video data (YMCBk) is corrected against the correction curve for correction and sent to the laser driver.

4. Generating Test Patterns

The video controller has a RAM area for generating test patterns; using a channel independent from that of the video signals from the image processor PCB, the signals are synchronized for the sub scanning direction to generate video signals.

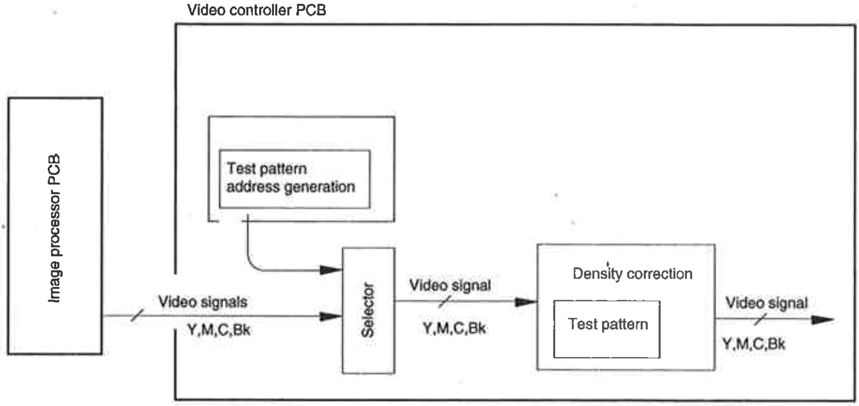

Video controller PCB
Image processor PCB
Test pattern address generation
Video signals
Y,M,C,Bk
Selector
Video signal
Y,M,C,Bk
Density correction
Test pattern
Video signal
Y,M,C,Bk

Figure 3-416

Address data for test patterns is generated in response to the ITOP signal, and addresses are assigned in the RAM for gamma correction. The selected video data is read from the RAM and sent to the laser driver.

For how to use the test patterns which are generated and sample images, see chapter 7, Troubleshooting image problems.

F. Laser Driver

Figure 3-417 shows the laser driver PCB used to generate the laser drive signal from video signals. The circuit drives the semiconductor laser units, and the laser power adjustment PCB monitors and controls the intensity of the laser beam. Each of these PCBs has the following functions:

Laser Driver PCB
1 Generates the laser drive signals for 400 lines/200 lines/266 lines.
2 Turns ON/OFF the laser.
3 Selects activation mode.

Laser Power Adjustment PCB
1 Monitors laser intensity.
2 Generates activation current.
3 Detects errors in activation current.

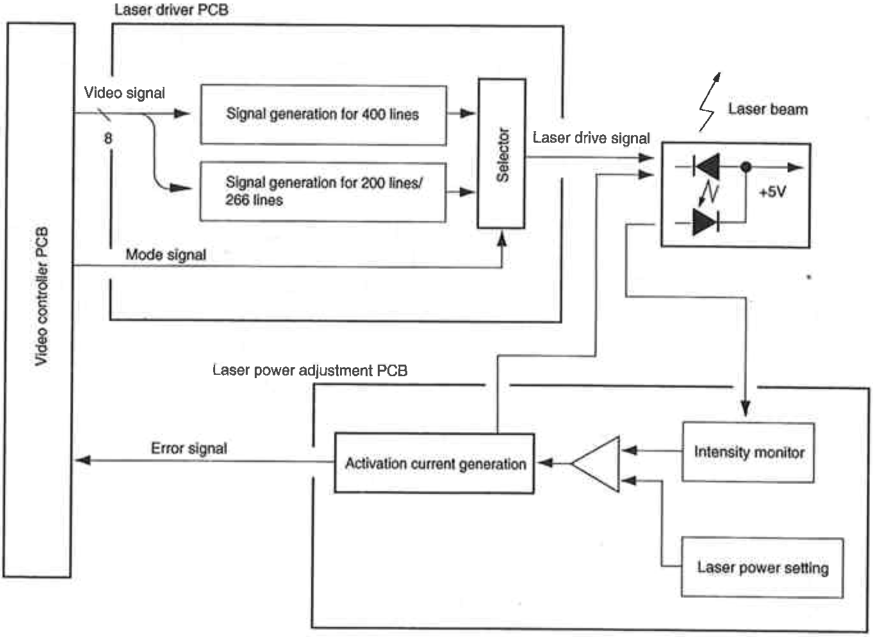

Laser driver PCB
Video signal
8
Signal generation for 400 lines
Signal generation for 200 lines/ 266 lines
Selector
Mode signal
Laser drive signal
Laser beam
+5V
Video controller PCB
Laser power adjustment PCB
Error signal
Activation current generation
Intensity monitor
Laser power setting

Figure 3-417

The video signals from the video controller PCB are 8-bit signals and assume a value between 0 (00H) through 255 (FFH). Pulse signals that suit the signals are generated in the 400-/200-/266-line laser drive signal generation block. (Figure 3-418)

The selector switches between 400 lines and 200 lines and turns off or on the laser in response to the mode signal.

The laser drive signals generated in this way are applied to the semiconductor laser to turn on the laser beam.

The laser beam has characteristics which cause its intensity to increase rapidly when the applied current exceeds the activation current. Since the activation current (I) varies according to the ambient temperature, the intensity at the point of activation is monitored at all times and the activation current is controlled so as to maintain a specific intensity.

The laser power adjustment mechanism used when servicing the CLC1000 varies the activation current (by volumes VR1 and VR2 on the laser power adjustment PCB), thereby properly setting the upper and the lower limits of the intensity.

If a correct intensity cannot be obtained because of an error in the semiconductor laser, the activation current will abnormally increase; such a condition is detected by the activation current error signal (E100-xx02).

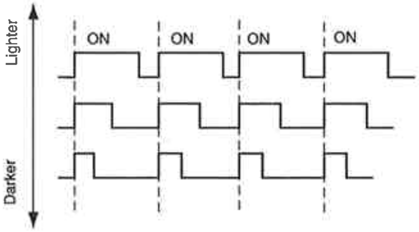


Figure 3-418

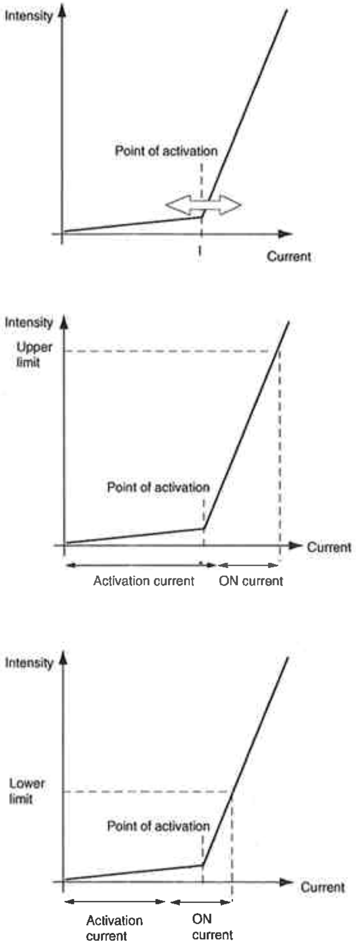


Figure 3-419

G. Image Position Correction

1. Outline

A color image is formed on paper by laying images of four different colors in the order of Y, M, C, and then Bk. Displacement of images can occur because of the following factors:

1 Displacement in main scanning direction
2 Displacement in sub scanning direction
3 Discrepancy in reproduction ratio
4 Slant

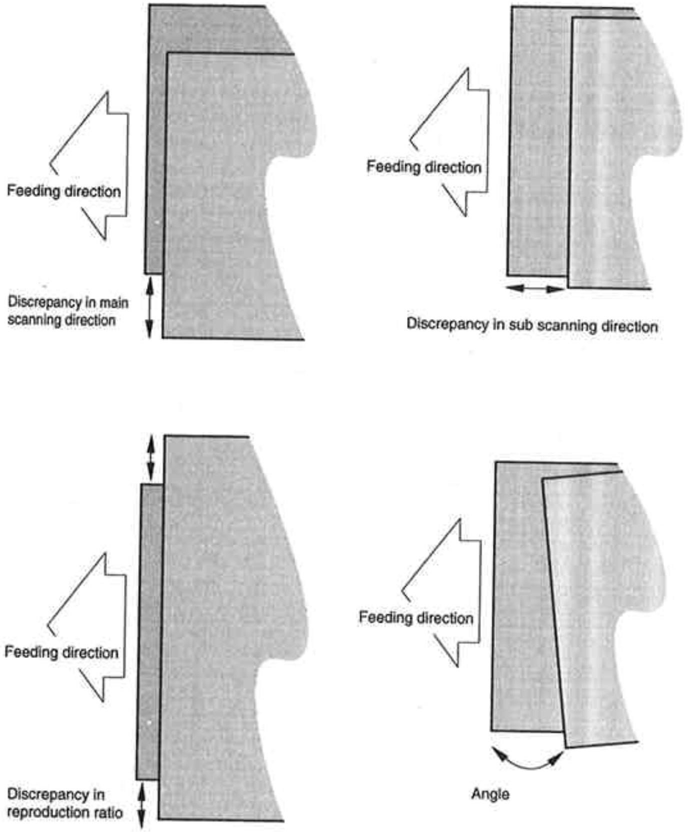

Feeding direction
Discrepancy in main scanning direction
Feeding direction
Discrepancy in sub scanning direction
Feeding direction
Discrepancy in reproduction ratio
Feeding direction
Angle

Figure 3-420

To prevent such displacement, the CLC1000 corrects image positions in relation to the above factors:

1 Transfers the image position correction pattern (output from the RAM area of the video controller) directly to the transfer belt (for Y, M, C, and Bk).
2 Reads the pattern of each color by the CCD for reading patterns.
3 Using the M pattern for reference, analyzes each pattern to determine the degree of discrepancy using the CPU on the DC controller.
4 Prepares correction data based on the results of analysis, and imposes feedback on each factor.

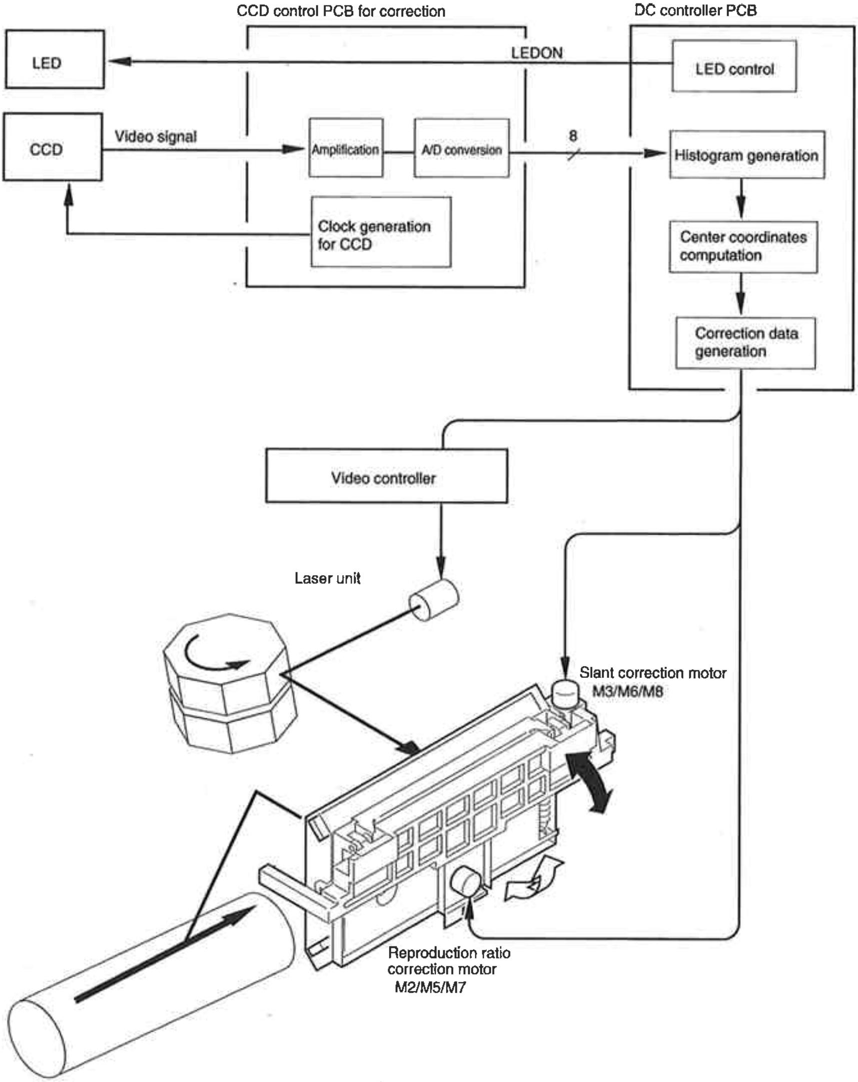

CCD control PCB for correction
DC controller PCB
LED
LEDON
LED control
CCD
Video signal
Amplification
A/D conversion
8
Histogram generation
Clock generation for CCD
Center coordinates computation
Correction data generation
Video controller
Laser unit
Slant correction motor M3/M6/M8
Reproduction ratio correction motor M2/M5/M7

Figure 3-421

2. Forming and Reading Correction Patterns

As the first step in correcting image position, a pattern is formed. The image data for such patterns is from the pattern generation RAM in the video controller, and patterns are formed on the transfer belt using the data as when creating regular images for copies.

As shown in Figure 3-422, patterns are formed along the front and the rear ends in the order of Y, C, M, and Bk and forwarded to the CCD for pattern reading.

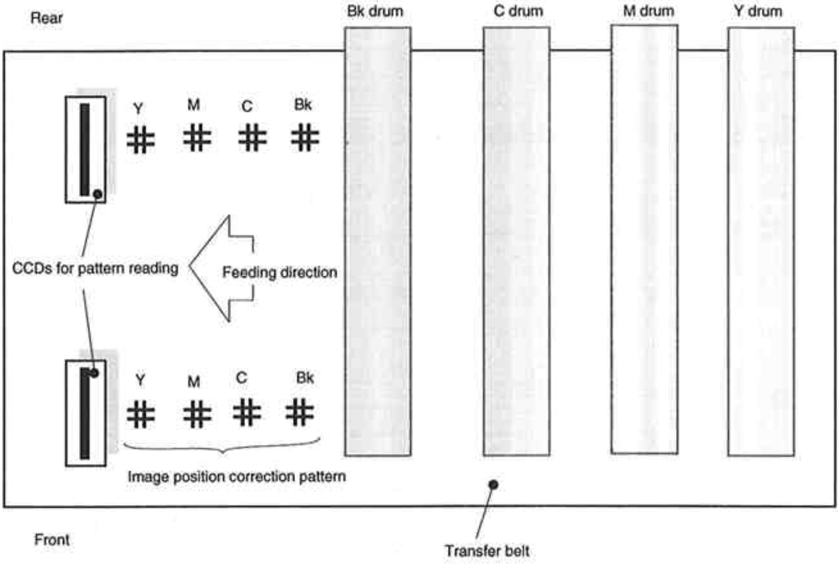

Rear
Bk drum
C drum
M drum
Y drum
Y
M
C
Bk
CCDs for pattern reading
Feeding direction
Y
M
C
Bk
Image position correction pattern
Front
Transfer belt

Figure 3-422

The Y, M, C, and Bk patterns are as shown in Figure 3-423.

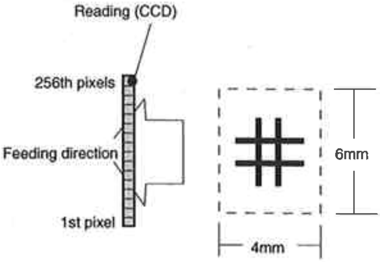

Reading (CCD)
256th pixels
Feeding direction
1st pixel
6mm
4mm

Figure 3-423

The pattern on the transfer belt is exposed by a LED and read by a special CCD.

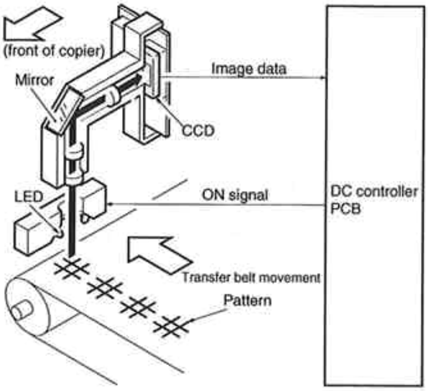

(front of copier)
Mirror
Image data
CCD
LED
ON signal
DC controller PCB
Transfer belt movement
Pattern

Figure 3-424

The image data is sent to the DC controller, and a histogram (Figure 3-425) is prepared for both main and sub scanning directions. The coordinates of the center of the pattern is computed based on the data. In the case of Figure 3-425, the center in the main scanning direction is the 128th pixel and that in the sub scanning direction is the 130th line.

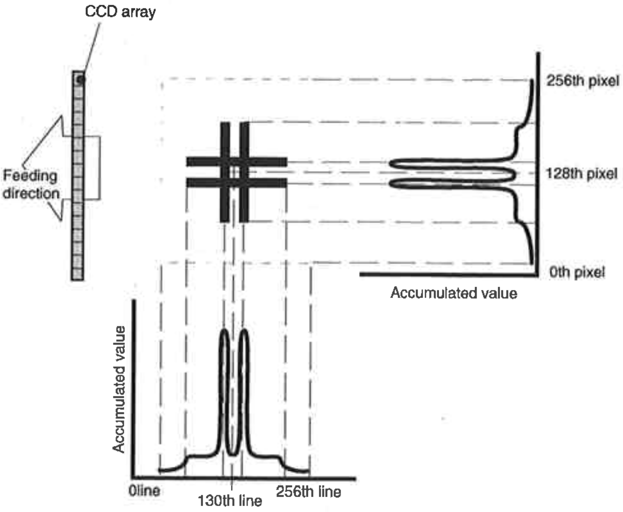

CCD array
Feeding direction
256th pixel
128th pixel
0th pixel
Accumulated value
Accumulated value
0line
130th line
256th line

Figure 3-425

This correction is executed at the following timing:

1 When the power switch is turned on.
2 When the Start key is pressed after a specific period of time* following a press on the power-switch. *Every two hours after 20 min, 40 min, 60 min, 90 min, and 120 min.
3 After jamming.
4 When activated in service mode.

The pattern is formed as follows:

When the power switch is turned on, the Y pattern is formed as soon as the fixing temperature reaches 110°C; then, the M pattern is formed after a specific period of time has passed (photosensitive drum-to-drum distance and pattern interval of 7 mm; for the C and Bk patterns, see Figure 3-427). Thereafter, the Y pattern is formed as soon as the photosensitive drum completes a half rotation. When a total of 8 sets of patterns have been made (Y, M, C, Bk), the average of the data values is computed.

The reading by the CCD is synchronized with the periods of time that pass following the generation of the Y image print enable signal.

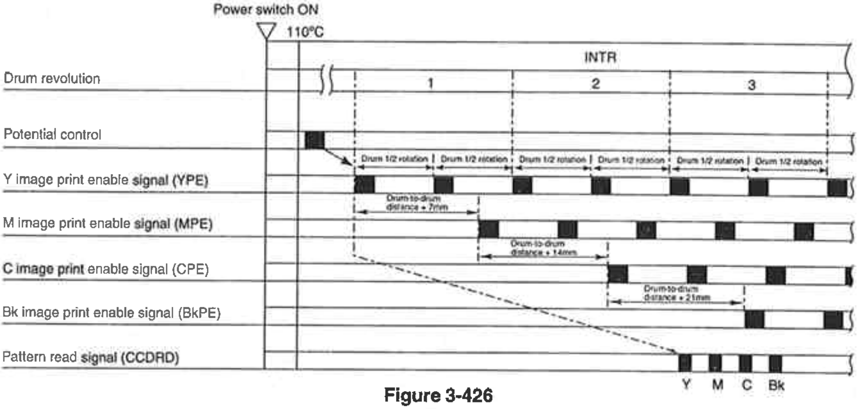

Power switch ON
110°C
INTR
Drum revolution
1
2
3
Potential control
Drum 1/2 rotation
Drum 1/2 rotation
Drum 1/2 rotation
Drum 1/2 rotation
Drum 1/2 rotation
Drum 1/2 rotation
Y image print enable signal (YPE)
Drum-to-drum distance + 7mm
M image print enable signal (MPE)
Drum-to-drum distance + 14mm
C image print enable signal (CPE)
Drum-to-drum distance + 21mm
Bk image print enable signal (BkPE)
Pattern read signal (CCDRD)
Y
M
C
Bk

Figure 3-426

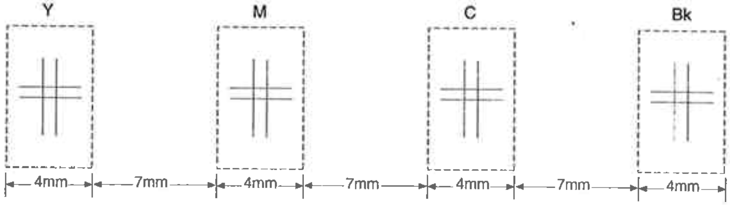

Y
M
C
Bk
4mm
7mm
4mm
7mm
4mm
7mm
4mm

Figure 3-427

The pattern reading assembly is equipped with a shutter (Figure 3-428) to prevent soiling with toner. The shutter is driven by the shutter drive motor, and the open/closed positions detected by the shutter open/closed sensor.

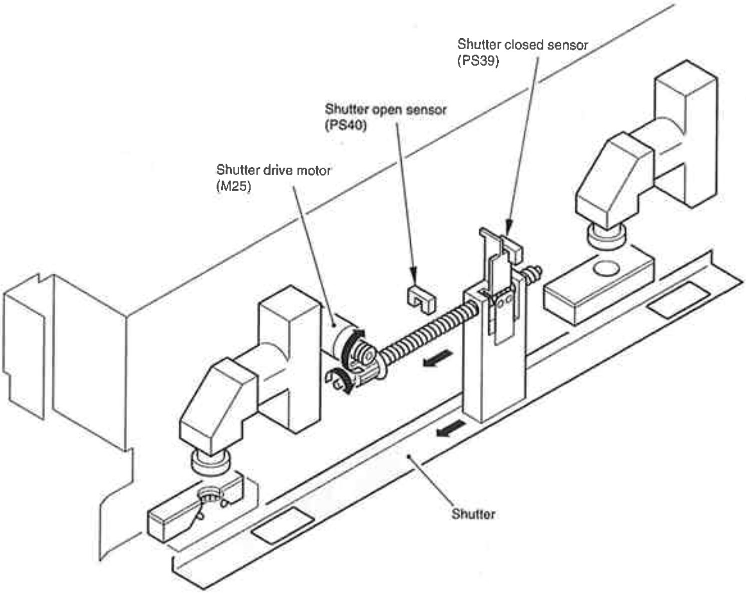


Figure 3-428

See Figure 3-429 for the sequence of operations. In sync with the image position correction movement, the shutter drive motor remains on for 5 sec to move the shutter to the open position. After reading eight sets of patterns, the shutter drive motor remains on for 5 sec once again to move the shutter to the closed position.

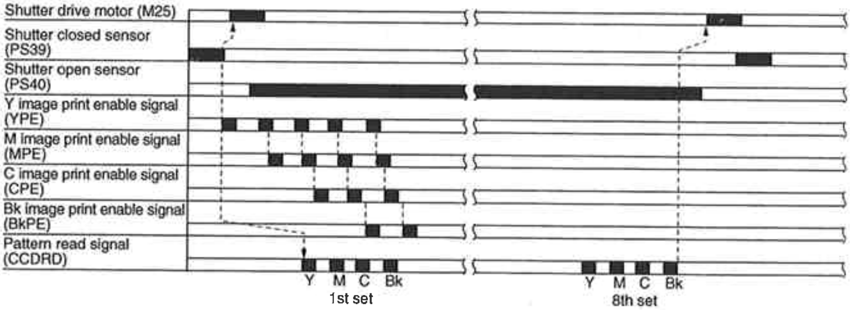


Figure 3-429

If the shutter open sensor dose not detect the light-blocking plate when the shutter must open while the motor is at rest, 'E194-0001' will be indicated on the control panel. If the shutter close sensor does not detect the light-blocking plate when the shutter must close, 'E194-0002' will be indicated on the control panel.

3. Correcting the Image Skew

The image is likely to be placed askew if the center of the pattern is different between the rear and the front. (In the case of Figure 3-430, the angle θ is not 0.) Here, correction is made so that the angle θ will be closer to 0.

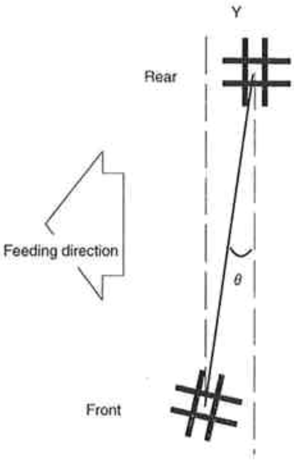

Y
Rear
Feeding direction
θ
Front

Figure 3-430

The correction is made by changing the tilt of the image position correction mirror, thereby changing the scanning angle of the laser beam (Figure 3-431).

In the case of Figure 3-430, the image position correction mirror is rotated in the direction shown in Figure 3-431 so that the scanning angle will be horizontal.

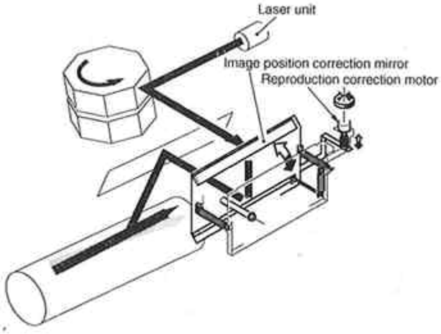

Laser unit
Image position correction mirror
Reproduction correction motor

Figure 3-431

4. Correcting a Discrepancy in Reproduction Ratios

If the distances between centers (Lm and Ly in Figure 3-432) are different, the reproduction ratio in the main scanning direction is likely to be incorrect. Here, correction is made so that Ly will be closer in value to Lm.

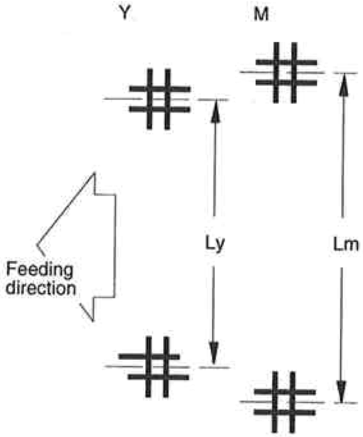

Y
M
Ly
Lm
Feeding direction

Figure 3-432

The correction is made by shifting the image position correction mirror horizontally, thereby changing the length of the optical path for the laser beam (Figure 3-433).

In the case of Figure 3-432, the length of the optical path is increased, thereby increasing the width of scanning.

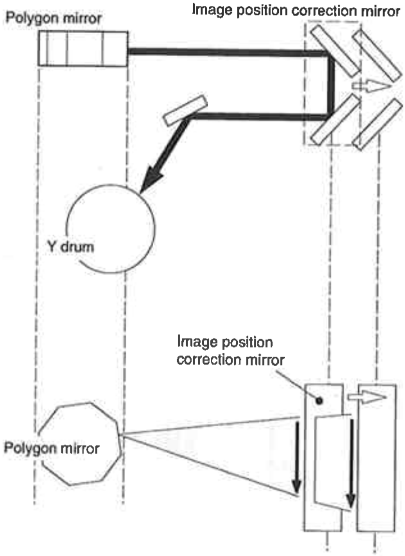

Polygon mirror
Image position correction mirror
Y drum
Image position correction mirror
Polygon mirror

Figure 3-433

5. Correcting a Discrepancy in the Main Scanning Direction

If the coordinates of the centers at the front and the rear are different (in Figure 3-434, ΔY is not 0), the position where images are started in the main scanning direction is likely to have a discrepancy. Correction is made so that ΔY will be closer to 0. (In the case of Figure 3-434, the start of Y will be delayed to correspond to the start of M.)

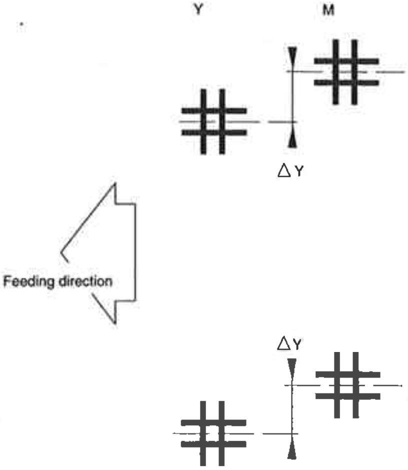

Y
M
ΔY
Feeding direction
ΔY

Figure 3-434

The correction is made by changing the read timing (T1 in Figure 3-435) for the Y, C, and Bk video signals. In the case of Figure 3-434, T1 is extended, thereby delaying the start of the Y image.

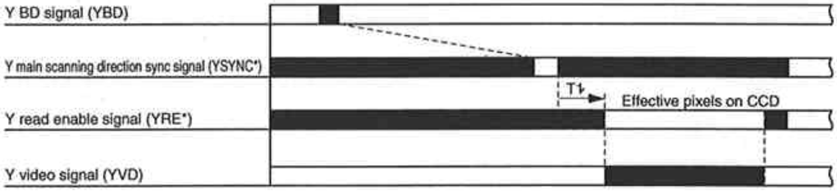
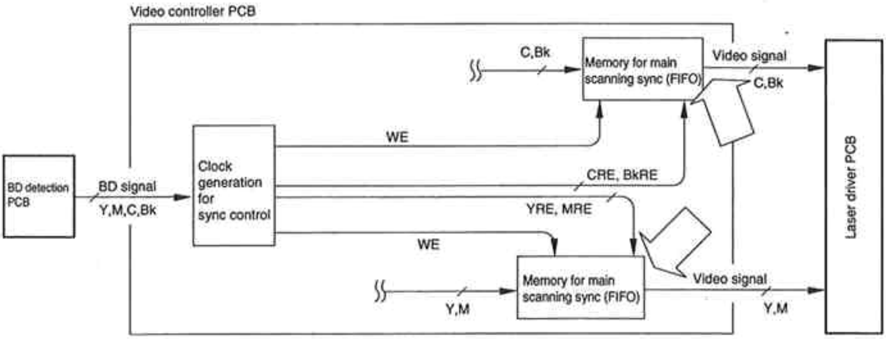

Y BD signal (YBD)
Y main scanning direction sync signal (YSYNC*)
T1
Effective pixels on CCD
Y read enable signal (YRE*)
Y video signal (YVD)

Figure 3-435


Video controller PCB
C,Bk
Memory for main scanning sync (FIFO)
Video signal
C,Bk
WE
BD detection PCB
BD signal
Y,M,C,Bk
Clock generation for sync control
CRE, BkRE
YRE, MRE
WE
Laser driver PCB
Memory for main scanning sync (FIFO)
Y,M
Video signal
Y,M

The read timing is varied at points indicated by broad arrows.

Figure 3-436

6. Correcting a Discrepancy in the Sub Scanning Direction

If the coordinates of centers in the pattern are different (in Figure 3-437, ΔX is not 0), the image start position in the sub scanning direction is likely to have a discrepancy. Correction is made so that ΔX will be closer to 0. (In the case of Figure 3-437, the Y start position will be advanced until it is the correct position.)

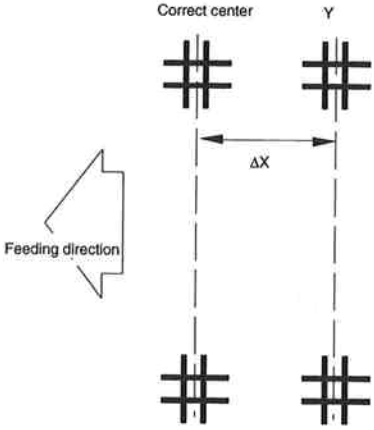

Correct center
Y
ΔX
Feeding direction

Figure 3-437

The correction is made by varying the read enable signal for the Y, C, and Bk video signals (T2 of Figure 3-438). In the case of Figure 3-437, T2 is extended to delay the timing for the Y image start.

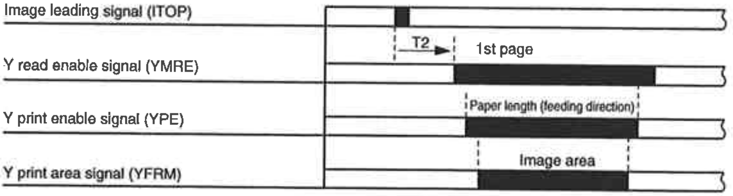


Image leading signal (ITOP)
T2
1st page
Y read enable signal (YMRE)
Paper length (feeding direction)
Y print enable signal (YPE)
Image area
Y print area signal (YFRM)

Figure 3-438

V. IMAGE FORMATION SYSTEM

A. Outline

The functions of the image formation system covers the following:

- Controls the drum surface potential (controls primary charging assembly grid bias/developing bias)
- Controls gradation correction (laser output control)
- Controls primary corona current
- Controls pre-primary corona current
- Controls developing bias
- Controls toner supply
- Detects Bk/color toner density
- Controls transfer current
- Controls separation corona current

Feedback is obtained by the following sensors:

- Environment Sensor
  Measures the temperature/humidity inside the machine. (Corrects the grid bias, separation charging bias, and transfer blade bias.)
- Potential Sensor
  Measures the photosensitive drum surface potential. (Corrects the grid bias and developing bias.)
- Color Toner Density Sensor
  Measures the toner density in the developer. (Supplies color toner.)
- SALT Sensor
  Measures the toner density on the photosensitive drum. (Supplies black toner/color toner.)
- Original Exposure CCD (PASCAL)
  Measures the toner density on copies by the CCD. (Corrects the grid bias, developing bias, and laser output.)

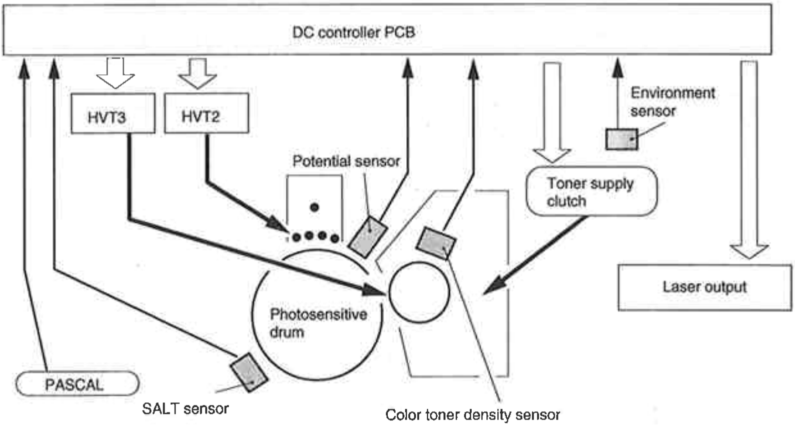

DC controller PCB
HVT3
HVT2
Potential sensor
Environment sensor
Toner supply clutch
Laser output
Photosensitive drum
PASCAL
SALT sensor
Color toner density sensor

Figure 3-501

The following five PCBs are used for supplying high voltage to each high-voltage unit:

1 HVT1

Supplies a DC bias to the transfer blade/internal static eliminating roller.

2 HVT2

Supplies a DC bias to the primary charging system.

3 HVT3

Supplies a DC/AC bias to the developing cylinder.

Supplies a DC bias to the stray toner collection electrode plate.

4 HVT4

Supplies a DC/AC bias to the separation charging unit.

5 HVT5

Supplies a DC bias to the pre-fixing charging unit.

The external static eliminating roller is grounded in relation to the internal static eliminating roller. For details, see the appropriate pages.

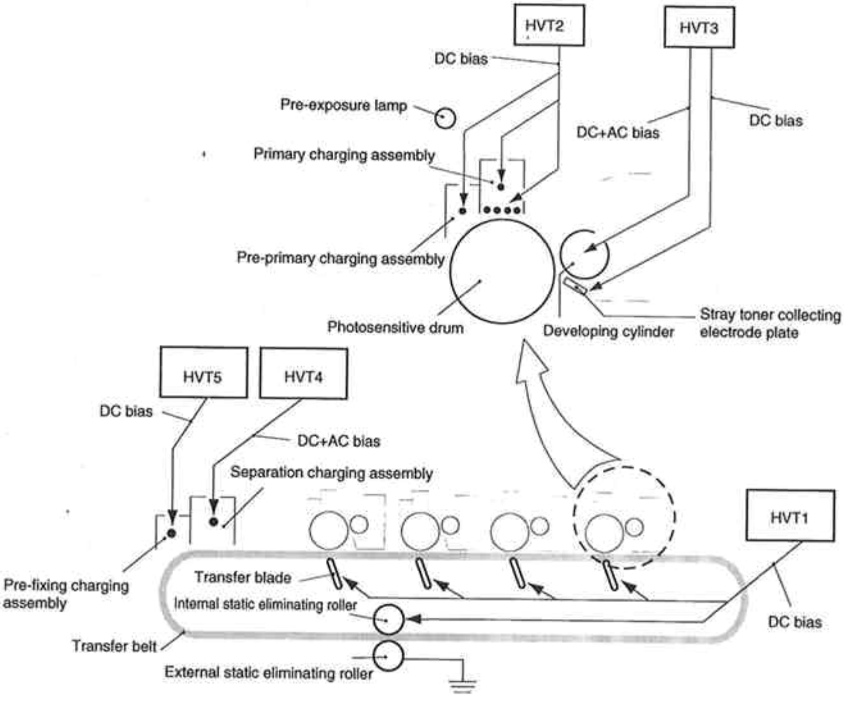
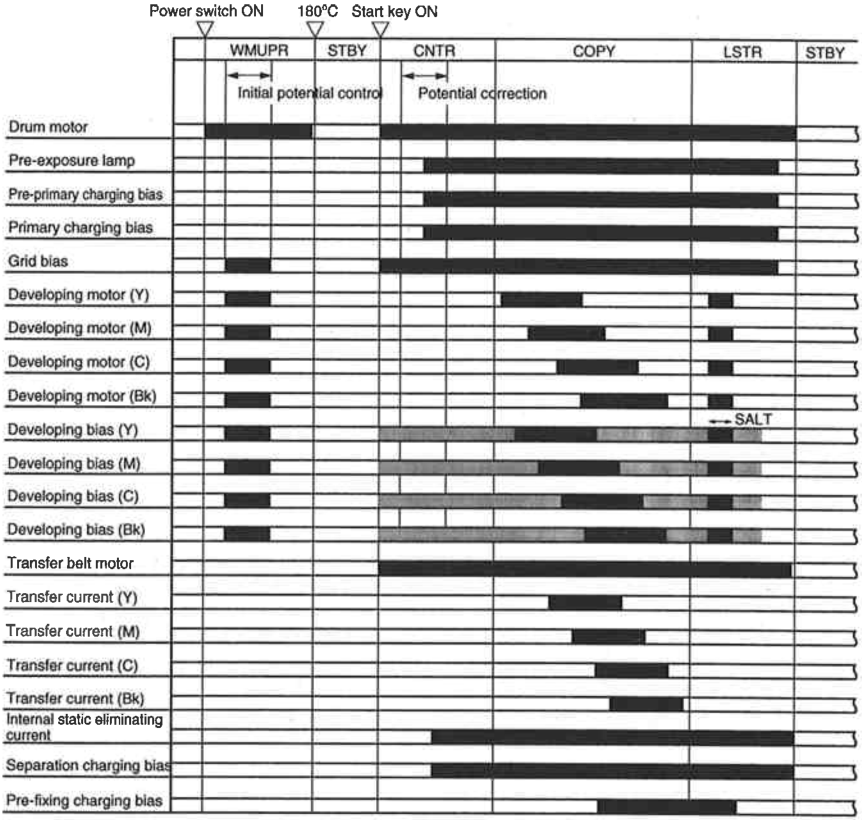

HVT2
HVT3
DC bias
Pre-exposure lamp
DC+AC bias
DC bias
Primary charging assembly
Pre-primary charging assembly
Photosensitive drum
Developing cylinder
Stray toner collecting electrode plate
HVT5
HVT4
DC bias
DC+AC bias
Separation charging assembly
HVT1
Pre-fixing charging assembly
Transfer blade
Internal static eliminating roller
DC bias
Transfer belt
External static eliminating roller

Figure 3-502

B. Basic Sequence of Operations (image formation system)


Power switch ON
180°C
Start key ON
WMUPR
STBY
CNTR
COPY
LSTR
STBY
Initial potential control
Potential correction
Drum motor
Pre-exposure lamp
Pre-primary charging bias
Primary charging bias
Grid bias
Developing motor (Y)
Developing motor (M)
Developing motor (C)
Developing motor (Bk)
Developing bias (Y)
SALT
Developing bias (M)
Developing bias (C)
Developing bias (Bk)
Transfer belt motor
Transfer current (Y)
Transfer current (M)
Transfer current (C)
Transfer current (Bk)
Internal static eliminating current
Separation charging bias
Pre-fixing charging bias

For developing bias, ▨ DC+AC ■ DC

Figure 3-503

C. Stabilizing Images

1. Outline

Copy images change over time for the following factors:

- Change in the amount of charging by the primary charging assembly.
- Change in the sensitivity of the photosensitive drum.
- Change in the charging characteristics of the developer.

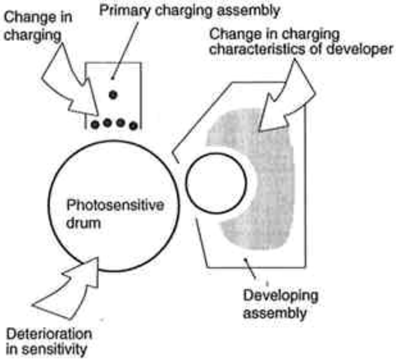

Change in charging
Primary charging assembly
Change in charging characteristics of developer
Photosensitive drum
Developing assembly
Deterioration in sensitivity

Figure 3-504

To ensure stable images in spite of these factors, the CLC1000 provides an image stabilizing control mechanism. When the power switch is turned on, the appropriate grid and developing biases are determined with reference to the data from the potential sensor; during copying, the grid bias is corrected based on the data from the environment sensor.

The grid bias and the developing bias are corrected and the laser output is corrected based on the correction data from PASCAL (explained later).

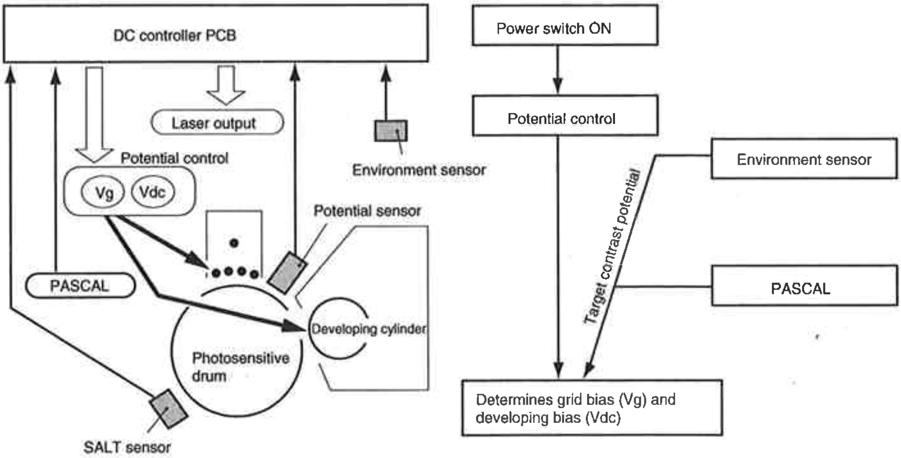

DC controller PCB
Laser output
Potential control
Vg
Vdc
Environment sensor
Potential sensor
PASCAL
Developing cylinder
Photosensitive drum
SALT sensor
Power switch ON
Potential control
Environment sensor
Target contrast potential
PASCAL
Determines grid bias (Vg) and developing bias (Vdc)

Figure 3-505

2. Controlling the Drum Surface Potential

a. Outline

The CLC1000 measures the drum surface potential to control the level of the grid and the developing biases as shown in Figure 3-506. When the power switch is tuned on, the appropriate grid and developing biases are determined so as to obtain an ideal contrast potential (initial potential control); thereafter, the appropriate grid bias is determined each time the Start key is pressed, thereby correcting changes over time (potential correction).

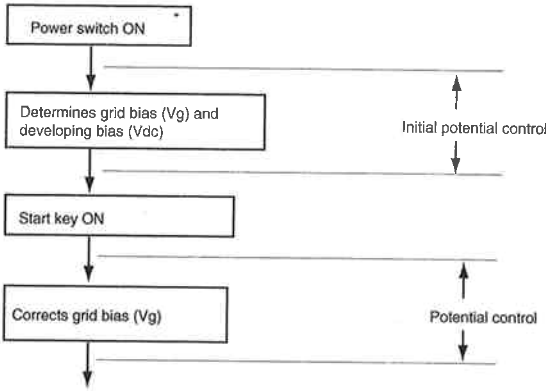

Power switch ON
Determines grid bias (Vg) and developing bias (Vdc)
Initial potential control
Start key ON
Corrects grid bias (Vg)
Potential control

Figure 3-506

See the pages that follow for details of each control mechanism.

The timing of control is as follows:

Initial Potential Control
- If the temperature of the fixing roller is 110°C or less when the power switch is turned ON.

Potential Correction
- Each time the Start key is pressed.

b. Initial Potential Control

Under this control, ideal grid and developing biases are determined as shown in Figure 3-507. The grid bias (Vg) of the primary charging assembly is set to two different voltages as in Figure 3-508 to measure the dark area potential (Vd: 00 activation of laser) and the light area potential (VL: full activation of laser).

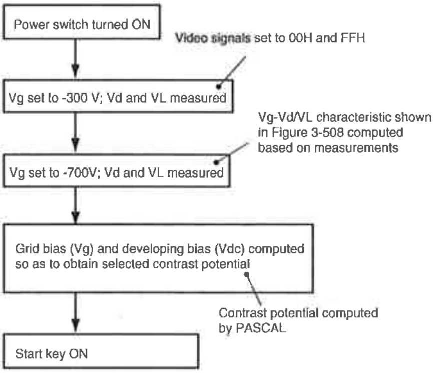

Power switch turned ON
Video signals set to 00H and FFH
Vg set to -300 V; Vd and VL measured
Vg-Vd/VL characteristic shown in Figure 3-508 computed based on measurements
Vg set to -700V; Vd and VL measured
Grid bias (Vg) and developing bias (Vdc) computed so as to obtain selected contrast potential
Contrast potential computed by PASCAL
Start key ON

Figure 3-507

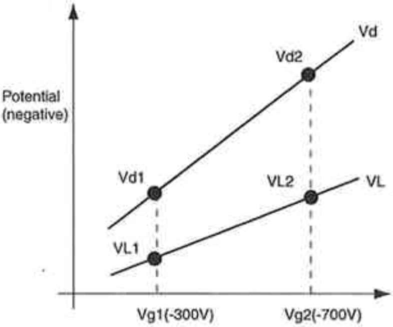


Figure 3-508

Subsequent copying operations are executed using the grid bias and the developing bias determined as discussed; the timing of measurement is as follows:

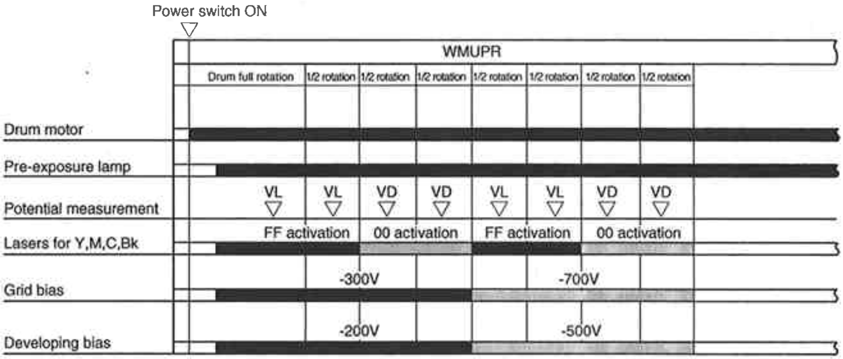

Power switch ON
WMUPR
Drum full rotation
1/2 rotation
1/2 rotation
1/2 rotation
1/2 rotation
1/2 rotation
1/2 rotation
1/2 rotation
Drum motor
Pre-exposure lamp
Potential measurement
VL
VL
VD
VD
VL
VL
VD
VD
Lasers for Y,M,C,Bk
FF activation
00 activation
FF activation
00 activation
Grid bias
-300V
-700V
Developing bias
-200V
-500V

Figure 3-509

The DC component of the grid and the developing biases is determined based on the Vg-Vd and Vg-V1 characteristics obtained through drum surface potential measurement and the target contrast potential computed by PASCAL as follows:

The developing bias DC (Vdc) curve is obtained from the Vd characteristic curve.

The potential between Vdc and VL in Figure 3-510 is the contrast potential.

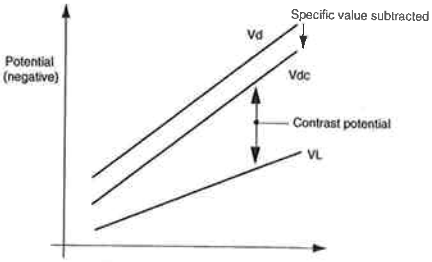


Figure 3-510

The point identical to the target contrast potential is detected, and the point is used to obtain the target value of the grid and developing biases; in the case of Figure 3-511, V1 and V2 are target values.

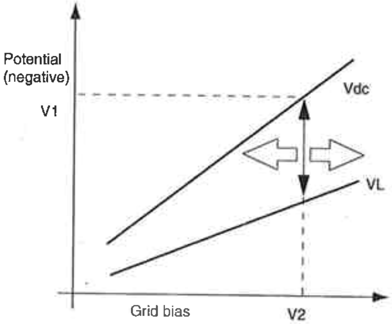


Figure 3-511

The measurement data for the surface potential may be checked in service mode.

Operation/inspection mode (FUNCTION)
→ Photosensitive drum potential measurement (EPC)

Item	Description	Reference
V00-300V	Surface potential at 00 activation	280 to 380
V00-700V	Surface potential at 00 activation	480 to 620
VFF-300V	Surface potential at full activation	35 to 145
VFF-700V	Surface activation at full activation	40 to 190

Table 3-501

c. Potential Correction

Under this control mechanism, correction is made to the grid and developing biases to compensate for the changes occurring over time as follows.

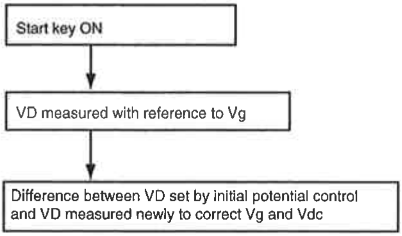

Start key ON
VD measured with reference to Vg
Difference between VD set by initial potential control and VD measured newly to correct Vg and Vdc

Figure 3-512

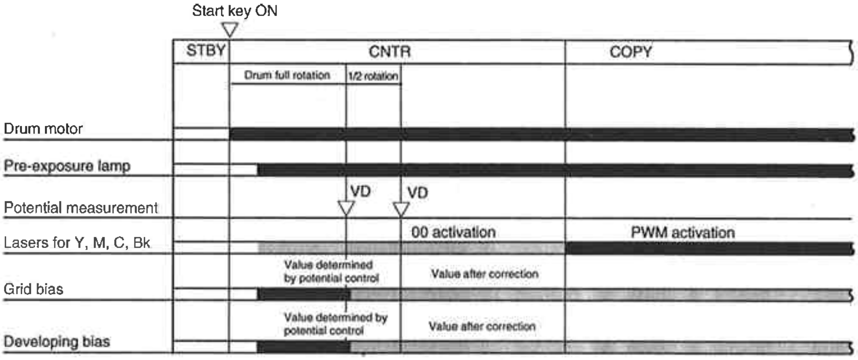

Start key ON
STBY
CNTR
COPY
Drum full rotation
1/2 rotation
Drum motor
Pre-exposure lamp
Potential measurement
VD
VD
Lasers for Y, M, C, Bk
00 activation
PWM activation
Grid bias
Value determined by potential control
Value after correction
Developing bias
Value determined by potential control
Value after correction

Figure 3-513

d. Error Code E061 Associated with Drum Surface Potential Control

E061 is an error code associated with drum surface potential control.

The CLC1000 executes drum surface potential control during multiple initial rotation at power-on and determines the grid and developing biases for each color with reference to the measurements taken and the pre-determined contrast potential.

The detail codes of E061 are explained below according to procedure for drum surface potential control and procedure for computation:

a. Procedure for Drum Surface Potential Control at Power-On
b Procedure for Computation and Associated Detail Codes

a. Procedure for Drum Surface Potential Control at Power-On

Step	Drum rotation	Grid output	Laser output	
1	1st rotation	Vg1 (-300V) output	V_{FF} output	Measures V_L1'
2				Measures V_L2'
3	2nd rotation		V_{00} output	Measures V_D1'
4				Measures V_D2'
5	3rd rotation	Vg2 (-700V) output	V_{FF} output	Measures V_L1
6				Measures V_L2
7	4th rotation		V_{00} output	Measures V_D1
8				Measures V_D2
9	Computes based on measurements			

Table 3-502

b. Procedure for Computation and Associated Detail Codes

Step	Checks	Detail code	Description of detail code	Possible cause
1	Measured value check	xx01	Difference of the measured value of VD1 is 30 V or more	Potential circuit PCB (faulty) DC controller PCB (faulty)
		xx02	Difference of the measured value of VD2 is 30 V or more	
		xx03	Difference of the measured value of VL1 is 30 V or more	
		xx04	Difference of the measured value of VL2 is 30 V or more	
2	VD/VL check (computed based on measured value)	xx10	VD1 is 500 V or more and, in addition, VD2 is 900 V or more	Pre-exposure lamp (faulty) Pre-primary, primary charging assembly (faulty) HV2 PCB (faulty)
		xx11	VD1 is 900 V or more and, in addition, VD2 is 900 V or more	Primary charging assembly (faulty) HV2 PCB (faulty)
		xx12	VD1 is 200 V or less and, in addition, VD2 is 600 V or less	Laser power adjustment (faulty) Laser unit (faulty) Video controller PCB (faulty)
		xx13	VD1 is 150 V or less and, in addition, VD2 is 300 V or less	
		xx14	VD1 and VD2 both are 150 V or less	Primary charging assembly (faulty) HV2 PCB (faulty)
		xx15	VD1, VD2, VL1, and VL2 are all 10 V or less	Potential control PCB (faulty)
		xx16	Difference between VD1 and VL1 is 20 V or less and, in addition, VD1 is 200 V; or, difference between VD2 and VL2 is 20 V or less and, in addition VD1 is 600 V or more	Scanner (faulty) Laser unit (faulty) Video controller PCB (faulty) Laser (fails to emit a beam)
		xx17	VL1 is 200 V or more and VL2 is 400 V or more	Laser unit (faulty) Video controller PCB (faulty) Laser power adjustment (faulty) Intensity at VFF (too high)

Table 3-503

Step	Checks	Detail code	Description of detail code	Possible cause
3	Vg check (computed based on measured value)	xx22	Computed value of Vg is upper limit (950 V) or more	Photosensitive drum (deterioration) Laser output (inadequate)
		xx26	Computed value of Vg is lower limit (250 V) or less	
4	Laser output value (V00) check (computed based on measured value)	xx20	V00 is upper limit (800 V) or more	Photosensitive drum (deterioration) Laser output (inadequate)
		xx23	V00 is upper limit (950 V) or more	
		xx25	V00 is lower limit (325 V) or less	Laser output (excessive) Grid plate (faulty)
5	Developing bias check (computed based on measured value)	xx21	VDC is upper limit (750 V) or more	Photosensitive drum (deterioration) Laser output (inadequate)
		xx24	VDC is lower limit (950 V) or more	Laser output (excessive) Grid plate (faulty)
6	Laser output (VFF) check (computed based on measured value)	xx27	VFF is upper limit (700 V) or more	
		xx28	VFF is lower limit (0 V) or more	
7	VD/VL check (computed based on measured value)	xx30	VD1 is upper limit (400 V) or more	Photosensitive drum (deterioration) Laser power adjustment (faulty) Laser unit (faulty) Video controller PCB (faulty)
		xx31	VD1 is lower limit (200 V) or less	
		xx32	VD2 is upper limit (800 V) or more	
		xx33	VD2 is lower limit (500 V) or less	
		xx34	VL1 is upper limit (200 V) or more	
		xx35	VL2 is upper limit (400 V) or more	
		xx36	VL2 is lower limit (0 V) or less	
		xx50	Difference between previous VD and newly computed VD is 30 V or more	Potential control PCB (faulty) DC controller PCB (faulty)
		xx51	Difference between previous VG and newly computed VG is 30 V or more	
		xx52	V00 is upper limit (950 V) or more	Photosensitive drum (deterioration) Laser shutter (faulty operation) Laser power adjustment (faulty) Laser unit (faulty) Video controller PCB (faulty)
		xx53	V00 is lower limit (325 V) or less	

Table 3-504

3. Controlling the Development Characteristics (SALT)

a. Outline

The printing density changes over time because of the following factors:

- Deterioration of the developer
- Deterioration of the photosensitive drum
- Changes in the environment

To make up for the changes, the density of the density pattern formed on the photosensitive drum is measured by the SALT sensor, and the toner supply period is corrected based on the resulting measurements.

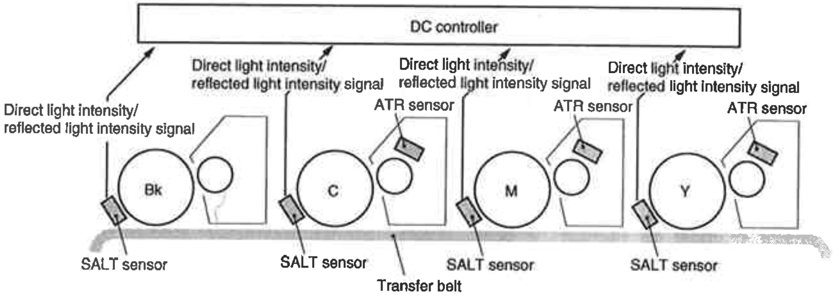

DC controller
Direct light intensity/ reflected light intensity signal
Direct light intensity/ reflected light intensity signal
Direct light intensity/ reflected light intensity signal
Direct light intensity/ reflected light intensity signal
ATR sensor
ATR sensor
ATR sensor
Bk
C
M
Y
SALT sensor
SALT sensor
SALT sensor
SALT sensor
Transfer belt

Figure 3-514

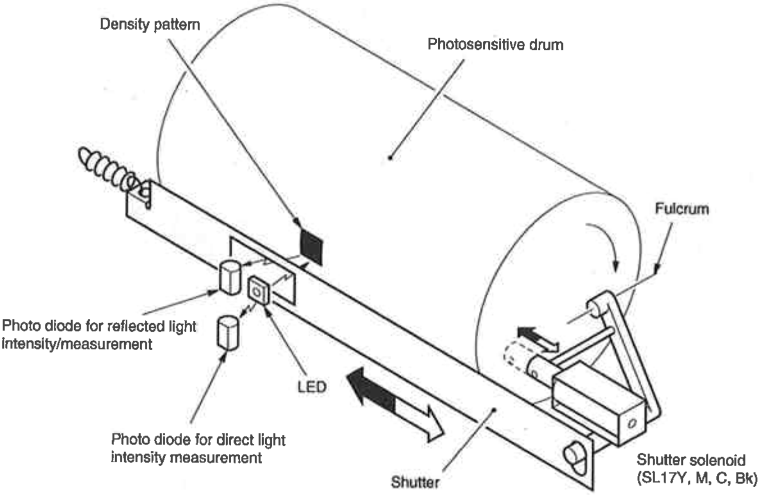

Density pattern
Photosensitive drum
Fulcrum
Photo diode for reflected light intensity/measurement
LED
Photo diode for direct light intensity measurement
Shutter
Shutter solenoid (SL17Y, M, C, Bk)

Figure 3-515

The toner density is measured by the SALT sensor as shown in Figure 3-516. When single copies are made, measurements are taken after each copying run; during continuous copying, measurements are taken when all copies have been made. However, if the copy count is set to '100' or higher, measurements are taken after each 100 copies have been made.

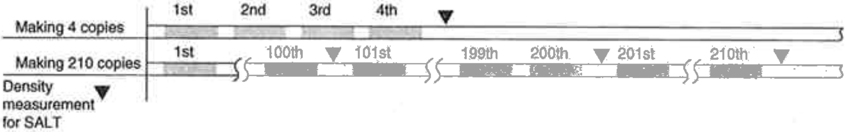

Making 4 copies
1st
2nd
3rd
4th
Making 210 copies
1st
100th
101st
199th
200th
201st
210th
Density measurement for SALT

Figure 3-516

The SALT sensor measures the density of toner, and computations are made to find out whether the current toner density is higher or lower in comparison with the ideal density. The results of computations are used to correct the toner supply amounts for the upcoming copying operations.

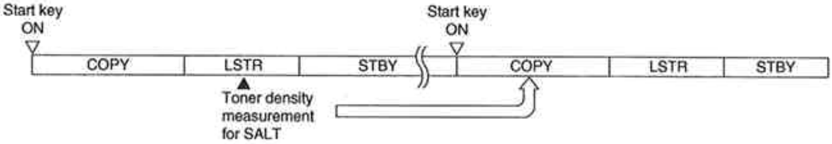

Start key ON
COPY
LSTR
STBY
Start key ON
COPY
LSTR
STBY
Toner density measurement for SALT

Figure 3-516A

4. Controlling the Gradation Characteristics (PASCAL)

a. Outline

The relationship between the output of the laser and the image density is as shown in Figure 3-517.

In user mode, you can operate the CLC1000 so that it actually develops, transfers, fixes, and outputs a solid patch and a 64-gradation halftone pattern for each color and then reads them by the CCD of the reader unit.

The density data of the solid patch is used to obtain a contrast potential, and the 64-gradation halftone density data is used to find out the actual gradation characteristics; all these findings are used for correction on the laser output so as to enable ideal gradation characteristics.

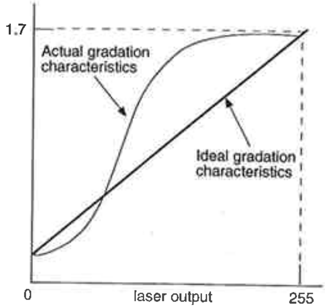


Figure 3-517

b. Operations

For how to use user mode, see Chapter 1.

1 In user mode, generate Auto Gradation Correction Test Print 1 (halftone and solid patch; Figure 3-518).

2 Referring to the halftone area of the generated Test Print 1, check for differences in density and faults in images; if an error is found, make adjustments according to the Basic Image Adjustment Procedure. If no error is found, operate so that the reader unit reads the solid images.
The data collected by reading the solid images on the Test Print is used to determine the contrast potential.

3 In user mode, generate Auto Gradation Correction Test Print 2 (64 gradations for each color; Figure 3-519). Here, the contrast potential determined in 2 above is used.

4 Operate so that the generated Test Print 2 is read by the reader unit.
At this time, the CLC1000 prepares a graph of output values and reading values (Figure 3-517), thereby determining the correction value to ensure ideal gradation characteristics.

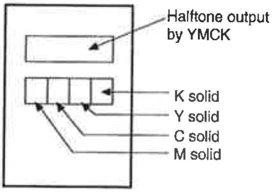


Figure 3-518 (Test Print 1)

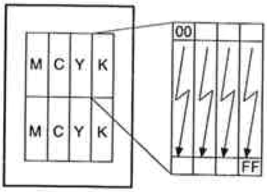


Figure 3-519 (Test Print 2)

D. Primary Charging Assembly

1. Outline

Figure 3-520 shows the construction of the primary charging assembly. The charge current for the primary corona wire and the pre-primary corona wire and the grid bias is controlled by the control signal from the DC controller. The change current for the primary corona wire is constant, and the grid bias is varied to control the drum surface potential.

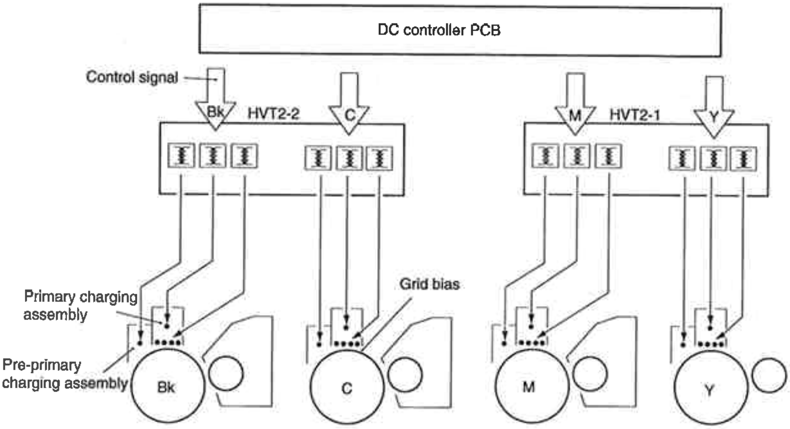

DC controller PCB
Control signal
Bk
HVT2-2
C
M
HVT2-1
Y
Primary charging assembly
Grid bias
Pre-primary charging assembly
Bk
C
M
Y

Figure 3-520

2. Controlling the Primary Corona Current

Figure 3-521 shows the current that controls the primary corona current, and the circuit has the following functions:

- Turns ON/OFF the primary corona current.
- Executes constant current control.

The primary corona current is turned on and off by the primary corona current drive signal (HVPR), and the mechanism is as follows:

HVPR=1

→ The variable width pulse oscillator circuit turns on, sending pulse output to the transformer.

→ The transformer is driven.

→ Corona current sent to the primary charging assembly.

The output of the primary corona current is monitored with reference to its current, and the data is fed back to the variable width pulse oscillator, thereby ensuring that the primary corona current remains constant. If an overcurrent, because of leakage or example, is detected, the OC signal forces off the pulse output. When such occurs, the primary corona current will remain OFF for 20 ms and then will return automatically.

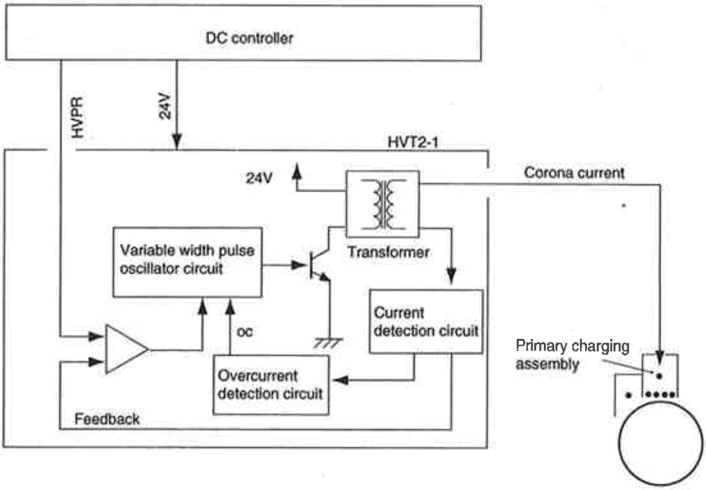

DC controller
HVPR
24V
HVT2-1
24V
Corona current
Transformer
Variable width pulse oscillator circuit
OC
Current detection circuit
Primary charging assembly
Overcurrent detection circuit
Feedback

Figure 3-521

3. Controlling the Grid Bias

Figure 3-523 shows the circuit that controls the grid bias, and the circuit has the following functions:

1. Controls the voltage.
2. Detects overcurrent.

The grid bias is controlled by the grid bias control signal (HVGR) as follows:

Input in the range of HVGR=0V to 12V (Correction is executed each time the Start key is pressed based on HVGR data from the enviroment sensor and the potential control.)

→ An output voltage suited to voltage of HVGR is generated by the transformer.

→ A specific voltage is applied to the grid.

The changes in the grid bias generated to suit the grid bias control signal (HVG) are as shown in Figure 3-522.

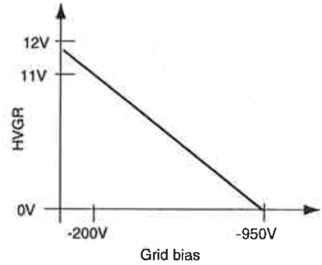


Figure 3-522

The output of the grid bias is monitored with reference to its voltage, and the data is fed back to the current control circuit. The feedback signal is used to ensure a specific level of grid bias. If an overcurrent is detected, because of leakage for example, the OC signal will turn on Q1, thereby forcing off the pulse output. When such occurs, the grid bias will remain off for 20 ms and then will return automatically.

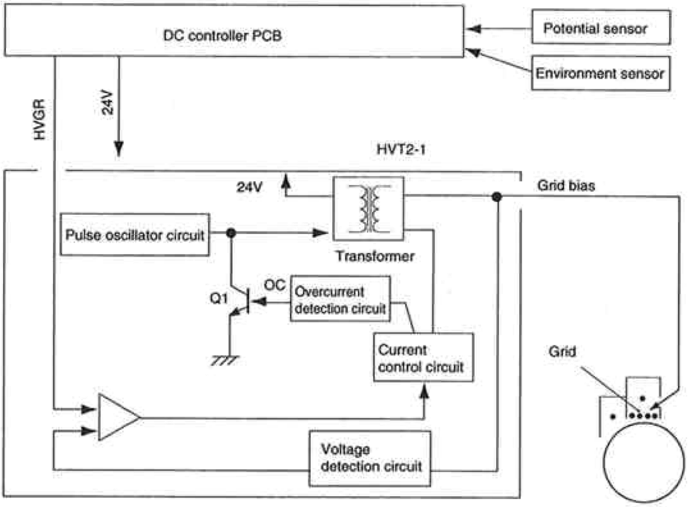

DC controller PCB
Potential sensor
Environment sensor
HVGR
24V
HVT2-1
24V
Grid bias
Pulse oscillator circuit
Transformer
OC
Q1
Overcurrent detection circuit
Current control circuit
Grid
Voltage detection circuit

Figure 3-523

4. Controlling the Pre-Primary Charging

Figure 3-524 shows the circuit that controls pre-primary charging current, and the circuit has the following functions:

1 Turns ON/OFF the pre-primary corona current.
2 Executes constant current control.

The pre-primary corona current is turned off and on by the pre-primary corona current drive signal (HVPPR) as follows:

Input in the range of HVPPR=0V to 12V (Correction is executed each time the Start key is pressed based on HVPPR data from the environment sensor and the potential control.)

→ An output voltage suited to voltage of HVGR is generated by the transformer.

→ The pulse output drives the transformer.

→ Corona current that suits the voltage of HVPPR is generated.

The output of the pre-primary current is monitored with reference to its current value, and the data is fed back to the variable pulse oscillator circuit. The feedback signal is used to ensure a specific level of pre-primary corona current. If overcurrent, because of leakage for example, is detected, the pulse output is forced off; the pre-primary corona current will remain OFF for 20 ms and thereafter will return automatically.

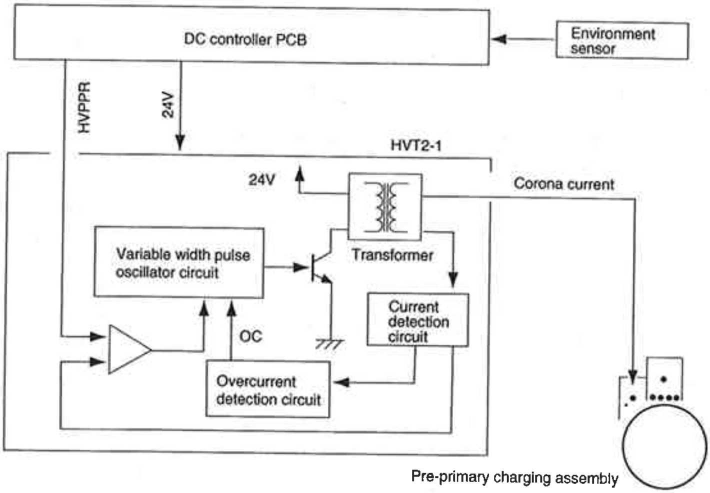

DC controller PCB
Environment sensor
HVPPR
24V
HVT2-1
24V
Corona current
Variable width pulse oscillator circuit
Transformer
Current detection circuit
OC
Overcurrent detection circuit
Pre-primary charging assembly

Figure 3-524

5. Primary Charging Wire Cleaning

The CLC1000 is equipped with an automatic cleaning mechanism for the primary charging wire. The mechanism turns on to clean the wire under the following conditions:

- The temperature of the fixing assembly is 165°C or less when the power switch is turned on.
- When the cleaning mechanism is activated in user mode.
- When 5000 copies have been made since the previous cleaning operation.

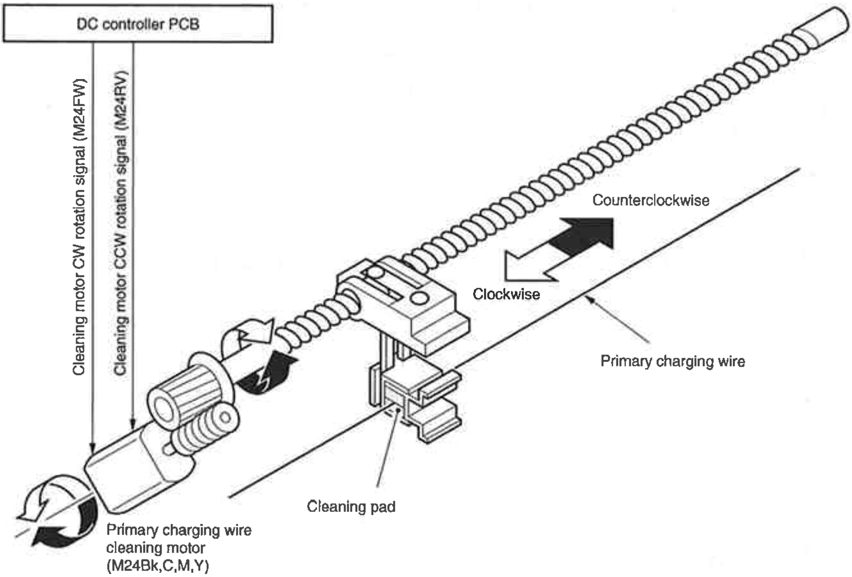

DC controller PCB
Cleaning motor CW rotation signal (M24FW)
Cleaning motor CCW rotation signal (M24RV)
Counterclockwise
Clockwise
Primary charging wire
Cleaning pad
Primary charging wire cleaning motor (M24Bk,C,M,Y)

Figure 3-525

When the control signal from the DC controller is M24FW=1, M24RV=0, the primary charging wire cleaning motor (M24) is rotated clockwise for about 13 sec; then, when M24FW=0, M24RV=1, the motor is rotated counterclockwise for about 13 sec.

This sequence of operations is the same for all colors.

E. Developing Assembly

1. Outline

The CLC1000 is equipped with four photosensitive drums, and a developing assembly is fixed in position for each drum for development of Y, M, C, and Bk. The developing cylinder for each color is driven by the developing motor installed for the respective color.

Toner is supplied to developing assemblies differently among Y, M, and C developing assemblies and Bk assembly. In the case of the Y, M, and C developing assemblies, infrared light is shone on the toner layer on the developing assemblies and the reflected light is measured to determine the amount of toner to supply; on the other hand, in the case of the Bk developing assembly, video signals representing the Bk component and the output of the SALT sensor are used to compute the amount of toner to supply. (See chapter 4. E. Developing Assembly, 4-b. "Measuring Color Toner Density" and "4-e. Measuring Toner Density by the SALT Sensor," respectively.)

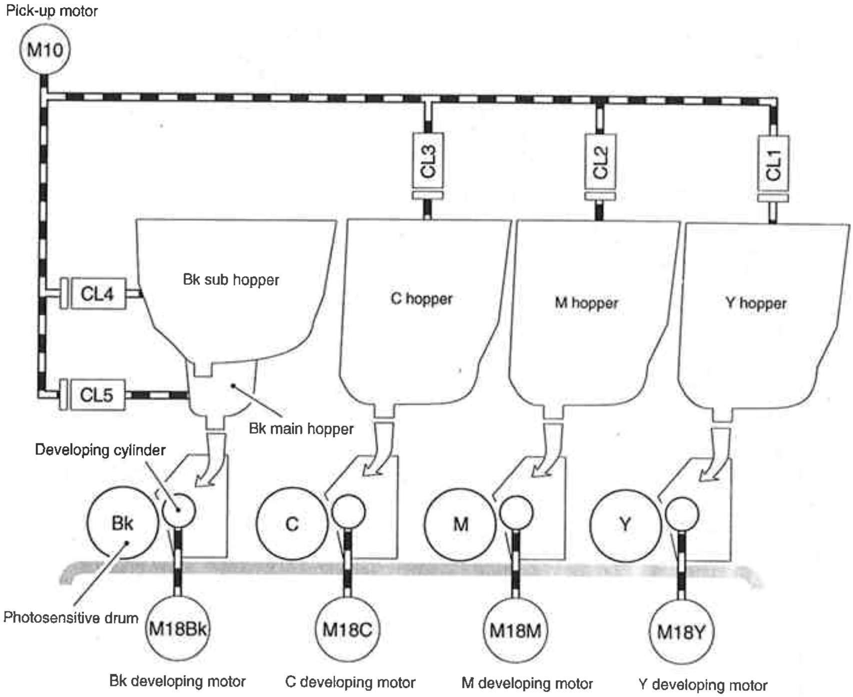

Pick-up motor
M10
CL3
CL2
CL1
CL4
CL5
Bk sub hopper
C hopper
M hopper
Y hopper
Bk main hopper
Developing cylinder
Bk
C
M
Y
Photosensitive drum
M18Bk
M18C
M18M
M18Y
Bk developing motor
C developing motor
M developing motor
Y developing motor

Figure 3-526

2. Controlling the Developing Bias

The developing bias applied to the developing cylinder is a combination of an AC bias and a DC bias. A DC bias is generated by the transformer on the HVT3A, and an AC bias is generated by the HVT3A based on ±1 kV generated by the transformer on the HVT3B. (The AC bias is generated so that it assumes the wave forms shown in Figure 3-528.) Both DC and AC biases are controlled by control signals from the DC controller for application.

The DC bias to the stray toner collecting electrode is generated by the HVT3B and sent in response to control signals.

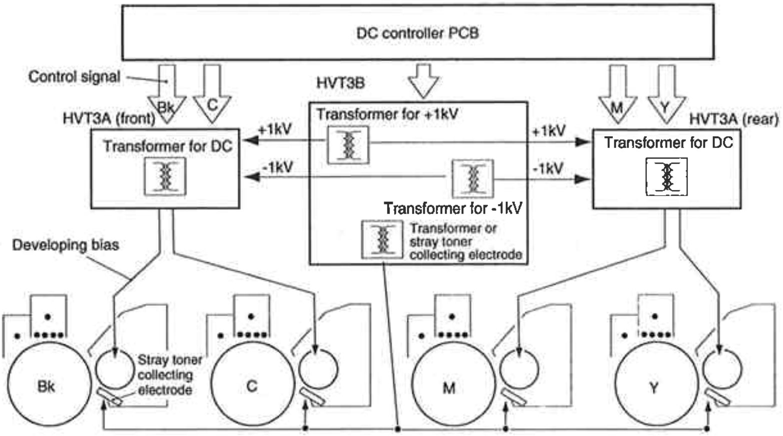

DC controller PCB
Control signal
HVT3B
HVT3A (front)
Bk
C
M
Y
HVT3A (rear)
Transformer for +1kV
Transformer for DC
+1kV
-1kV
+1kV
-1kV
Transformer for DC
Transformer for -1kV
Transformer or stray toner collecting electrode
Developing bias
Bk
Stray toner collecting electrode
C
M
Y

Figure 3-527

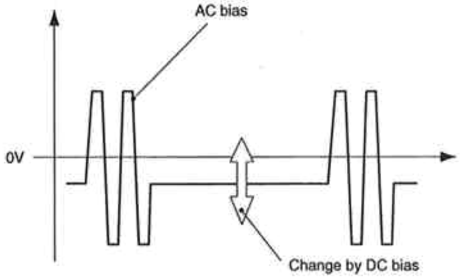

AC bias
0V
Change by DC bias

Figure 3-528

Figure 3-529 shows the circuit that controls the developing bias, and the circuit has the following functions:

HVT3B
- Generates high voltage for AC bias
- Generates timing signals for AC bias generation

HVT3A
- Turns on and off the DC bias
- Generates AC bias
- Turns on and off the AC bias
- Controls the voltage for DC bias

The AC bias is generated and turned on/off as follows:

Transformer drive signal HVON=1 and developing AC bias enable signal HVACEN=1

→ The transformer is driven, and ±1kV is sent to the AC bias generation circuit.

→ An AC bias is generated based on signals from the timing generation circuit.

→ When the AC bias output signal HVAC=1, the AC bias is applied to each developing cylinder.

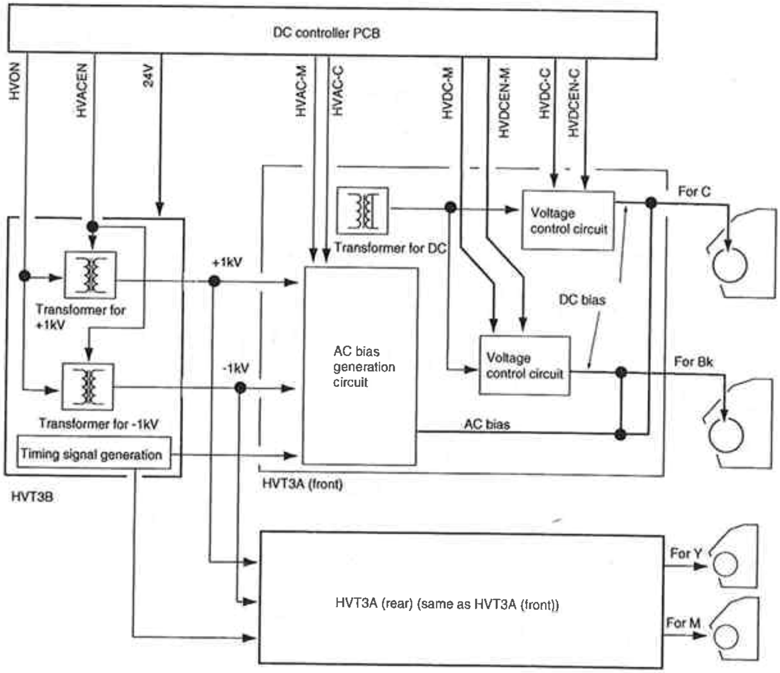

DC controller PCB
HVON
HVACEN
24V
HVAC-M
HVAC-C
HVDC-M
HVDCEN-M
HVDC-C
HVDCEN-C
For C
Voltage control circuit
Transformer for DC
+1kV
Transformer for +1kV
DC bias
AC bias generation circuit
-1kV
Voltage control circuit
For Bk
Transformer for -1kV
AC bias
Timing signal generation
HVT3B
HVT3A (front)
For Y
HVT3A (rear) (same as HVT3A (front))
For M

Figure 3-529

The DC bias is turned on and off, and the voltage is controlled as follows:

Developing bias enable signal (HVDCEN)=1

→ The DC bias output signal HVDC (between 0V and 12 V) is sent to the voltage control circuit.

→ The output from the transformer is controlled to suit the voltage of HVDC and is applied to the developing cylinder.

The DC bias output signal (HVDC) and the developing bias enable signal (HVDCEN) have four channels (for each color), and each of the four channels is controlled independently.

The changes in the developing DC bias according to different voltage values are as shown in Figure 3-530.

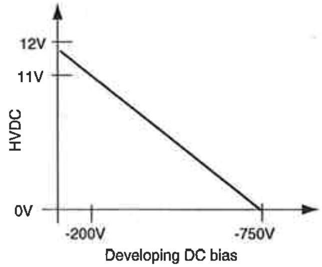


Figure 3-530

3. Controlling the DC Bias for Stray Toner Collection

Figure 3-531 shows the circuit that controls the DC bias for stray toner collection, and the circuit has the following functions:

- Turns on and off the DC bias for stray toner collection.
- Executes constant current control.

The stray toner collection DB bias is turned on and off by the stray toner collection DC bias drive signal (HVSRD) as follows:

HVSRD=1
→ The variable width pulse oscillator circuit turns ON, and pulse output is sent to the transformer.
→ The transformer is driven.
→ A DC bias is applied to the stray toner collection electrode.

The output of the stray toner collection DC bias is monitored with reference to its current value, and the data is fed back to the variable width pulse oscillator circuit. This feedback ensures a constant level of DC bias.

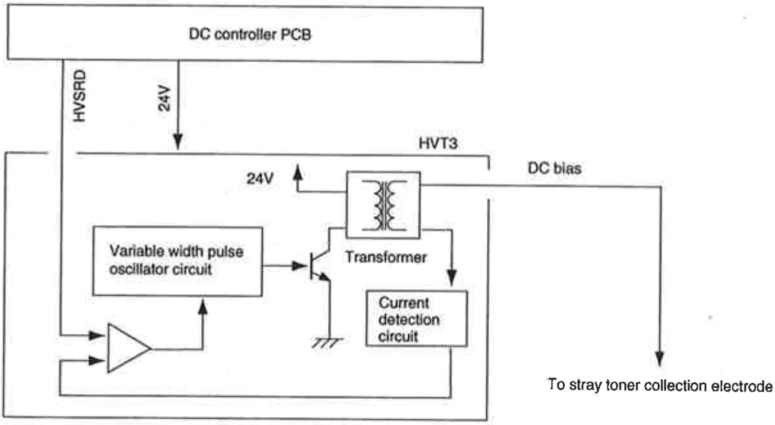

DC controller PCB
HVSRD
24V
HVT3
24V
DC bias
Variable width pulse oscillator circuit
Transformer
Current detection circuit
To stray toner collection electrode

Figure 3-531

4. Supplying Toner

a. Outline

Toner is supplied from the hopper based on the measurements taken of the toner density. Different methods are used to measure the density between Bk toner and Y, M, and C toners because of different toner characteristics. For Y, M, and C toners, the color toner density sensor is used to measure the density of the toner in the developer layer on the developing cylinder. As in the case of carriers, the Bk toner tends to absorb infrared light, and for this reason the density on the developing cylinder cannot be measured. The video signals carrying a Bk component are counted to find out the image density, thereby computing toner consumption. When copying operation ends, the SALT sensor measures the toner image on the photosensitive drum to find out the toner density.

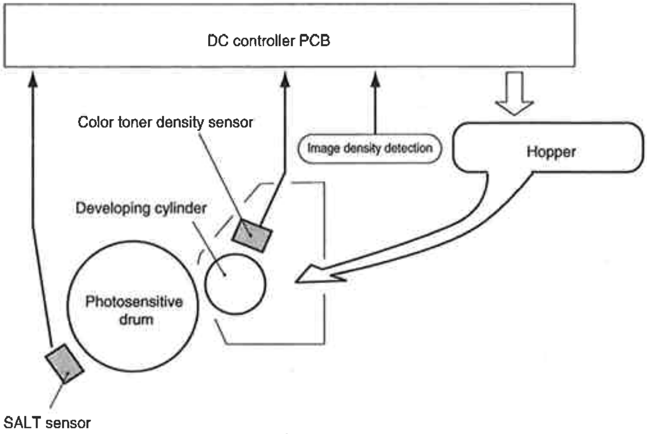
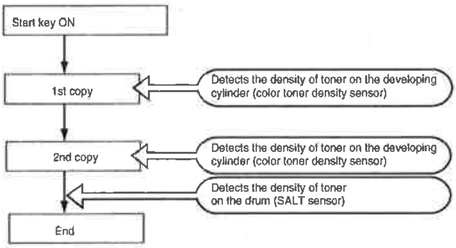
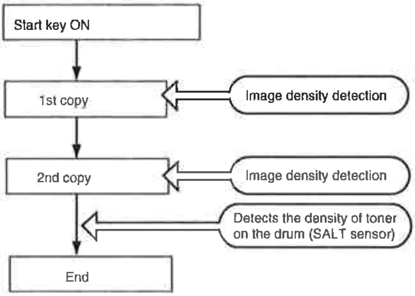

DC controller PCB
Color toner density sensor
Image density detection
Hopper
Developing cylinder
Photosensitive drum
SALT sensor

Figure 3-532

See Figures 3-533 and -534 for sequences used to measure Y, M, and C toners and the Bk toner; the supply operation is executed each time the measurement value falls below a specific value.


Start key ON
1st copy
Detects the density of toner on the developing cylinder (color toner density sensor)
2nd copy
Detects the density of toner on the developing cylinder (color toner density sensor)
Detects the density of toner on the drum (SALT sensor)
End

Measuring the Y, M, and C Toners
Figure 3-533


Start key ON
1st copy
Image density detection
2nd copy
Image density detection
Detects the density of toner on the drum (SALT sensor)
End

Measuring the Bk Toner
Figure 3-534

b. Measuring the Color Toner Density

The Y, M, and C developing assemblies each are equipped with a color toner density sensor inside them (Figure 3-535), and each sensor is used to measure the density of toner retained on its respective cylinder.

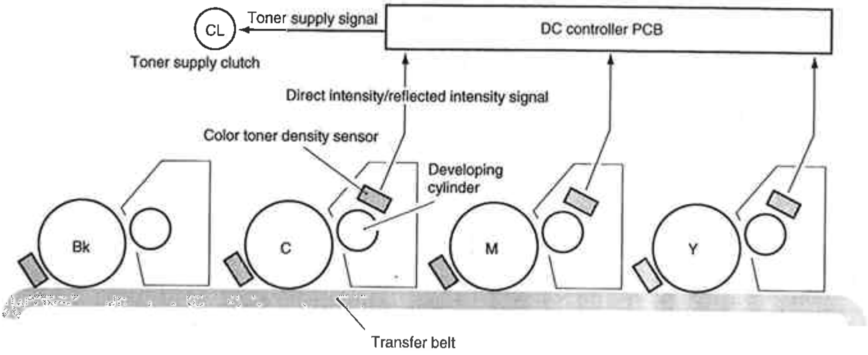

CL
Toner supply signal
DC controller PCB
Toner supply clutch
Direct intensity/reflected intensity signal
Color toner density sensor
Developing cylinder
Bk
C
M
Y
Transfer belt

Figure 3-535

The mechanism of measurement is as follows:

The CLC1000's developer is a two-component developer consisting of carrier and toner. When exposed to infrared light, the color toner will reflect infrared light while the carrier will absorb it. In other words, when the amount of toner decreases because of consumption over time, the reflection of infrared light will decrease because of the changing toner/carrier ratio of the developer.

Using an infrared diode, the toner/carrier ratio is computed from the intensity of the infrared light reflected by the developer on the developing cylinder.

To make up for the deterioration occurring in the infrared diode and changes in temperature, the direct light is also measured at the same time.

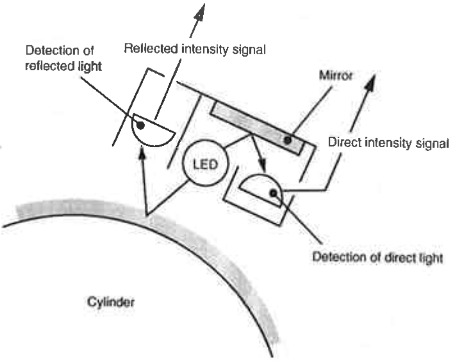

Detection of reflected light
Reflected intensity signal
Mirror
Direct intensity signal
LED
Detection of direct light
Cylinder

Figure 3-536

The sequence of measurement is as follows:

When the developer has been replaced upon installation or when the sensor has been replaced, you must set the initial values for the reflected light and the direct light in service mode. (See chapter 7. Troubleshooting Image Problems.) During copying operation that follows, the LED is turned ON to read the reflected light and the direct light occurring when the developing cylinder has rotated, thereby computing the toner density with reference to the difference between the initial value and the measured value.

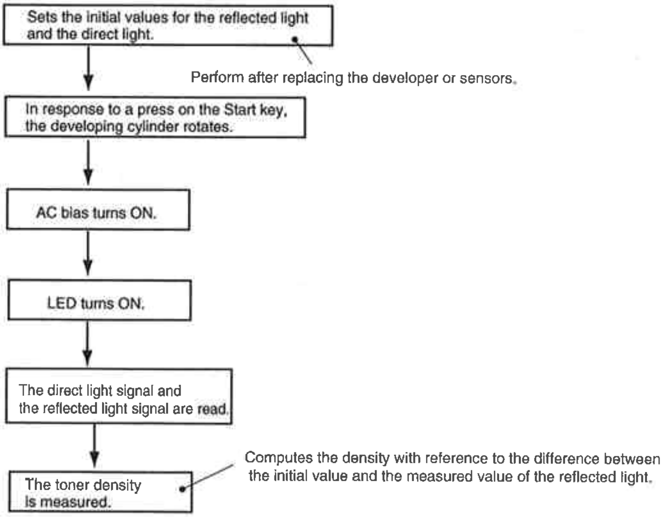

Sets the initial values for the reflected light and the direct light.
Perform after replacing the developer or sensors.
In response to a press on the Start key, the developing cylinder rotates.
AC bias turns ON.
LED turns ON.
The direct light signal and the reflected light signal are read.
The toner density is measured.
Computes the density with reference to the difference between the initial value and the measured value of the reflected light.

Figure 3-537

In the case of the M developing assembly, the LED ON signal (LEDON*) turns on the LED inside the sensor. The LED intensity is kept to a specific value by controlling the current to the LED so that the intensity of direct light (REF-M level) remains the same. By comparing the reflected intensity (SGNL-M) and its initial value, a voltage corresponding to the density of the toner is computed and used as the toner density signal. The intensity of the LED changes over time or according to the ambient temperature. The degree of deterioration is computed by comparing the initial value and the intensity of direct light at time of measurement and is used as the correction value when measuring the density of toner.

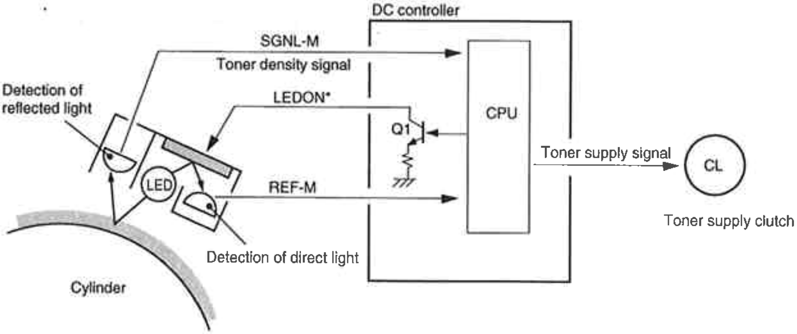

DC controller
SGNL-M
Toner density signal
Detection of reflected light
LEDON*
Q1
CPU
LED
Toner supply signal
CL
REF-M
Toner supply clutch
Detection of direct light
Cylinder

Figure 3-538

Each measurement data unit may be checked in service mode.

Control display mode (DISPLAY)
→ Developer density (DENS)

Item	Description	Reference
SGNL-Y	Toner layer reflection intensity	700 to 912
SGNL-M	Toner layer reflection intensity	700 to 912
SGNL-C	Toner layer reflection intensity	700 to 912
REF-Y	Surface activation at full activation	377 to 848
REF-M	Surface activation at full activation	377 to 848
REF-C	Surface activation at full activation	377 to 848

Table 3-505

c. Supplying Color Toner

If the results of measuring the toner density indicate that the density of toner inside the developing assembly is below a specific level, the DC controller sends the toner supply signal to turn on the toner supply clutch. As a result, the drive of the Pick-up motor moves through the toner supply screw to supply toner to the developing assembly. This operation is executed while the developing cylinder is rotating after measuring the density of toner.

The duration of toner supply, i.e., during which the toner supply clutch remains on, varies depending on the toner density signal.

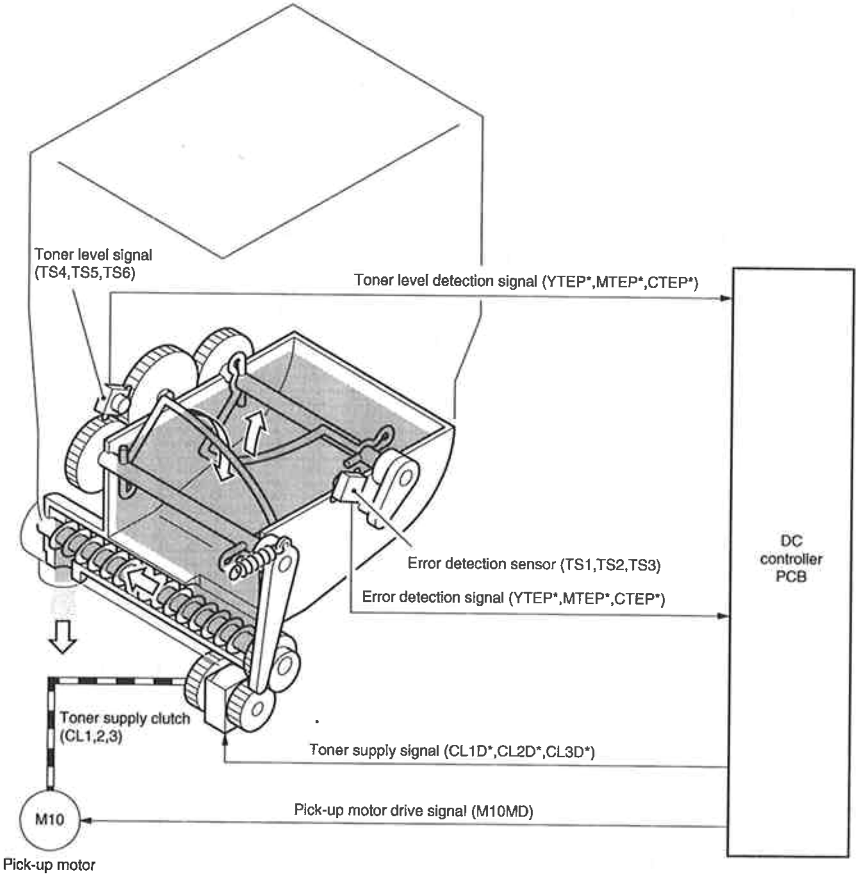

Toner level signal
(TS4,TS5,TS6)
Toner level detection signal (YTEP*,MTEP*,CTEP*)
DC
controller
PCB
Error detection sensor (TS1,TS2,TS3)
Error detection signal (YTEP*,MTEP*,CTEP*)
Toner supply clutch
(CL1,2,3)
Toner supply signal (CL1D*,CL2D*,CL3D*)
M10
Pick-up motor drive signal (M10MD)
Pick-up motor

Figure 3-539

Each hopper for color toner is equipped with a toner sensor, which is a piezoelectric oscillator.

The front sensors (TS4, 5, 6) monitor the level of toner and, when the toner level falls below the sensor, issues the message "ADD TONER" on the control panel when copying operation ends.

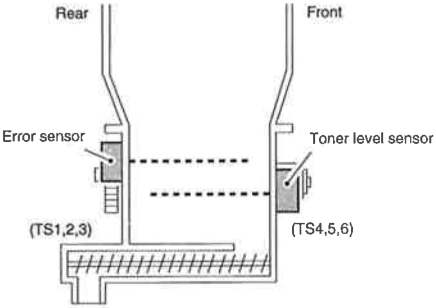


Figure 3-540

The rear sensors (error sensors TS1, 2, 3) look for sensor faults or damage to the stirring rod. If an error sensor (TS1, 2, 3) detects the absence of toner while the toner level sensor (TS4, 5, 6) detects the presence of toner, 'E020' will be indicated on the control panel when copying operation ends.

d. Detecting the Image Density

Like carriers, the Bk toner absorbs infrared light, allowing the measurement of the density of the toner layer on the developing cylinder. Bk toner is supplied based on the amount of consumption computed with reference to the count of the video signals carrying a Bk component. As shown in Figure 3-541, the video signals from the image processor are counted to obtain a cumulative count by the video data counter.

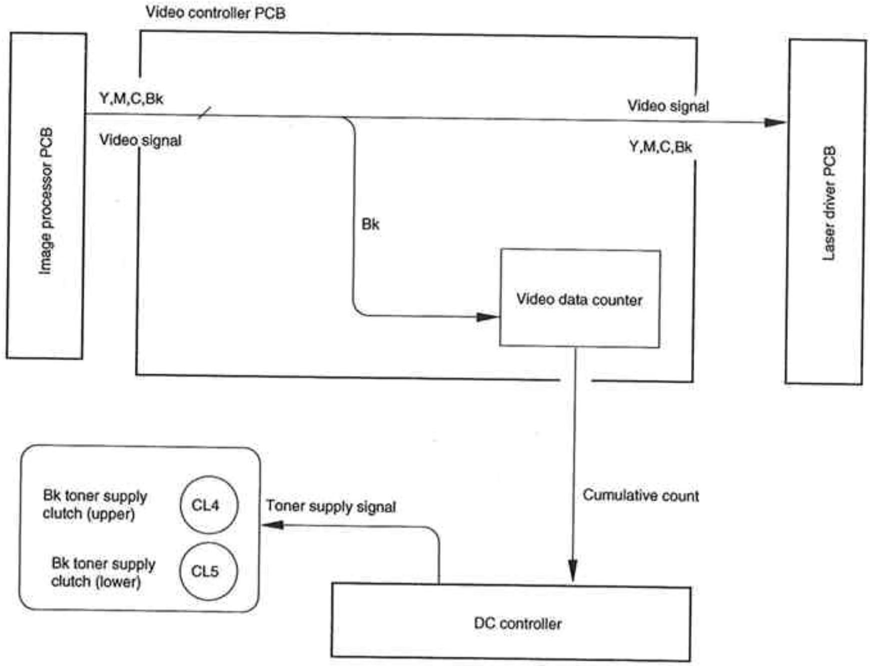

Video controller PCB
Image processor PCB
Y,M,C,Bk
Video signal
Video signal
Y,M,C,Bk
Laser driver PCB
Bk
Video data counter
Cumulative count
Bk toner supply clutch (upper)
CL4
Bk toner supply clutch (lower)
CL5
Toner supply signal
DC controller

Figure 3-541

e. Measuring the Toner by the SALT Sensor

To check the density of toner within the developer, a toner image is formed on the photosensitive drum after copying operation. This measurement of density is done by the SALT sensor (Figure 3-542) mounted to the side of the photosensitive drum. A density pattern is formed on the photosensitive drum, and infrared light is shone against the density pattern to measure the density with reference to the reflected light.

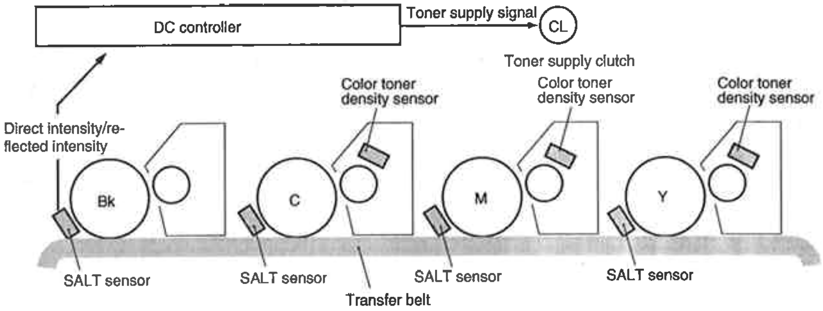

DC controller
Toner supply signal
CL
Toner supply clutch
Color toner density sensor
Color toner density sensor
Color toner density sensor
Direct intensity/re-flected intensity
Bk
C
M
Y
SALT sensor
SALT sensor
SALT sensor
SALT sensor
Transfer belt

Figure 3-542

The changes in the LED intensity over time or caused by changes in ambient temperature are corrected in the same way as for color toner. Since the window of the sensor tends to become soiled with stray toner, correction is made for the dirt on the window also.

The LED is turned on during last rotation after copying operation, and the light reflected by the surface of the photosensitive drum without a deposit of toner is read. The difference between the measured value and the initial value is used as a correction value when computing the density of the density pattern.

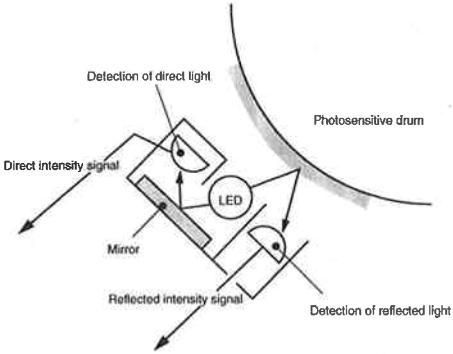

Detection of direct light
Photosensitive drum
Direct intensity signal
LED
Mirror
Reflected intensity signal
Detection of reflected light

Figure 3-543

The current to the LED is controlled so that the direct intensity (level of REF-S-K) is constant, thereby maintaining the intensity of the LED at a specific value.

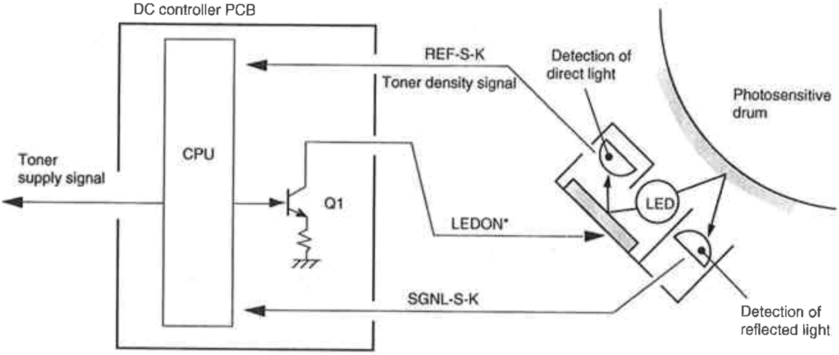

DC controller PCB
REF-S-K
Toner density signal
Detection of direct light
Photosensitive drum
Toner supply signal
CPU
Q1
LED
LEDON*
SGNL-S-K
Detection of reflected light

Figure 3-544

When the developer has been replaced upon installation or a sensor has been replaced, set the initial values for the reflected light and the direct light in service mode. (See chapter 7. Troubleshooting Image Problems.) Then, the following takes place after a copying run:

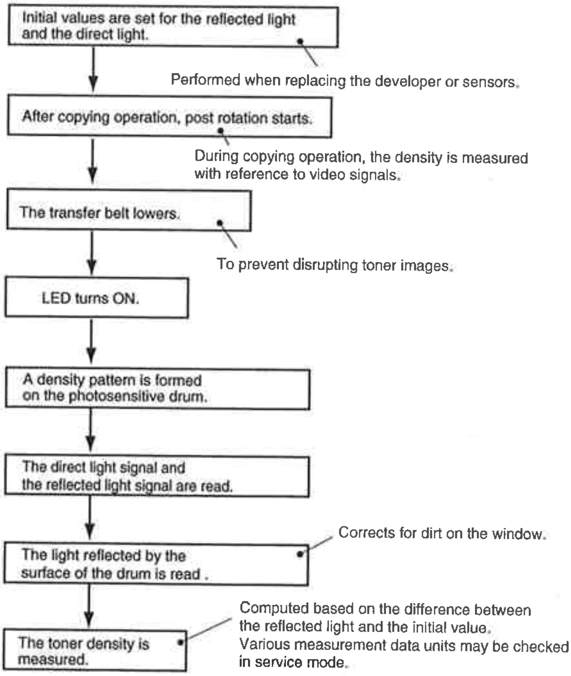

Initial values are set for the reflected light and the direct light.
Performed when replacing the developer or sensors.
After copying operation, post rotation starts.
During copying operation, the density is measured with reference to video signals.
The transfer belt lowers.
To prevent disrupting toner images.
LED turns ON.
A density pattern is formed on the photosensitive drum.
The direct light signal and the reflected light signal are read.
Corrects for dirt on the window.
The light reflected by the surface of the drum is read .
Computed based on the difference between the reflected light and the initial value.
Various measurement data units may be checked in service mode.
The toner density is measured.

Figure 3-545

Various measurement data units may be checked in service mode.

Control display mode (DISPLAY)
→ Developer density (DENS)

Item	Description	Reference
SGNL-S-K	Light reflected by toner layer	192 to 352
REF-S-K	Intensity of direct light	464 to 544

Table 3-506

f. Checking the Dirt on the Window

The LED is turned on during last rotation (LSTR) after copying operation so as to measure the light reflected from the photosensitive drum without toner on it (SGNL-D-K).

If the sensor window is soiled at this time, the value of SGNL-D-K will be small. The ratio of the measurement to the initial value (as determined by SINIT-K) is stored in memory as the correction value and used to correct the output of the SALT sensor.

If the measurement SGNL-D-K is 60% or less of a specific value, ‘E020’ will be indicated.

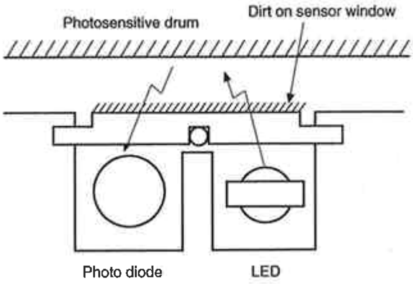


Figure 3-546

g. Supplying Bk Toner

As shown in Figure 3-547, the sequence of supply operations is based on the detection of the density of the image and the measurement of the density taken by the SALT sensor.

When the original has been exposed, the video signals are counted, and the toner supply period is determined based on the cumulative count.

When copying operation ends, the SALT sensor measures the density of toner on the photosensitive drum is measured. If the resulting measurement is higher than the ideal density (too much toner), a subtraction will be made from the count of video signals so that the supply period (amount) will be less; if the measurement is lower than the ideal density (too little toner), on the other hand, opposite correction is made to supply a larger amount of toner.

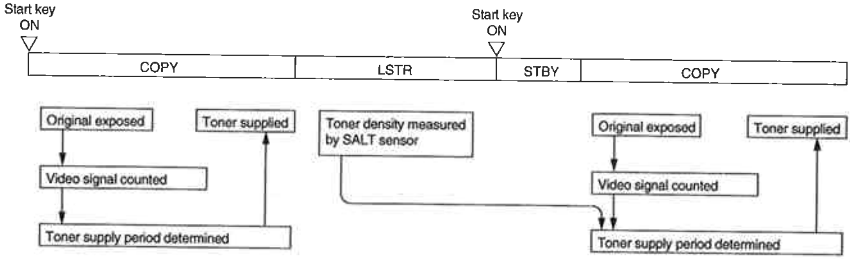

Start key
ON
Start key
ON
COPY
LSTR
STBY
COPY
Original exposed
Toner supplied
Video signal counted
Toner supply period determined
Toner density measured by SALT sensor
Original exposed
Toner supplied
Video signal counted
Toner supply period determined

Figure 3-547

The toner density is measured by the SALT sensor as follows. When making single copies, measurements are taken each time copying ends; in continuous copying, measurements are taken when all copies have been made. However, if the copy count is set to '100' or higher, measurements are taken when the 100th copy has been made. (See Figure 3-548.)

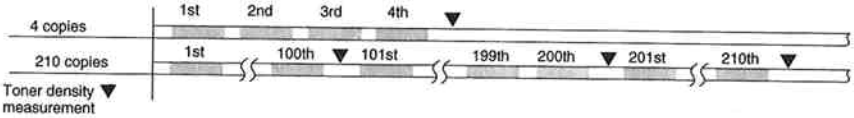

4 copies
1st
2nd
3rd
4th
210 copies
1st
100th
101st
199th
200th
201st
210th
Toner density ▼ measurement

Figure 3-548

As shown in Figure 3-549, the hopper consists of a main hopper and a sub hopper. Bk toner requires higher precision than color toner for supply operation because its amount of supply is based on a value computed from video signals. To ensure precision, the main hopper, in which toner tends to cake less, is used to supply toner to the developing assembly.

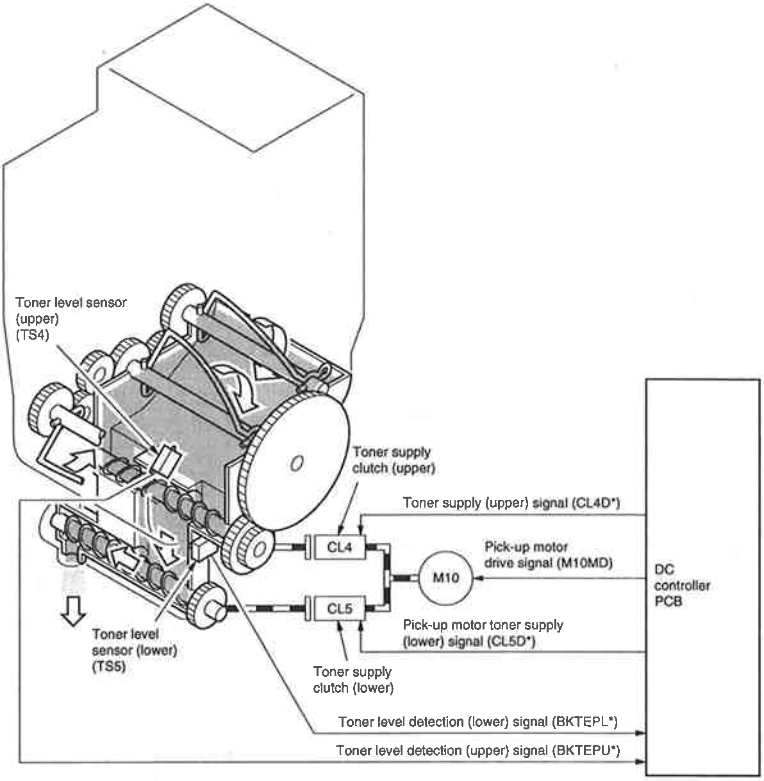

Toner level sensor (upper) (TS4)
Toner supply clutch (upper)
Toner supply (upper) signal (CL4D*)
CL4
Pick-up motor drive signal (M10MD)
M10
DC controller PCB
CL5
Pick-up motor toner supply (lower) signal (CL5D*)
Toner level sensor (lower) (TS5)
Toner supply clutch (lower)
Toner level detection (lower) signal (BKTEPL*)
Toner level detection (upper) signal (BKTEPU*)

Figure 3-549

If the results of measuring the toner density indicate that the density of toner inside the developing assembly is below a specific value, the DC controller sends the toner supply signal to turn on the toner supply clutch. As a result, the drive of the Pick-up motor will be transmitted to the toner supply screw to supply the developing assembly with toner.

The toner density signal is used to determine how long toner should be supplied, i.e., how long the toner supply clutch should remain on.

The Bk toner hopper is equipped with a toner sensor, which is a piezoelectric oscillator.

The level of toner inside the main hopper is monitored by a sensor (TS5), and the level of toner inside the sub hopper is monitored by another sensor (TS4).

When the level of toner inside the sub hopper falls under the sensor, the message "ADD TONER" will be indicated on the control panel after copying.

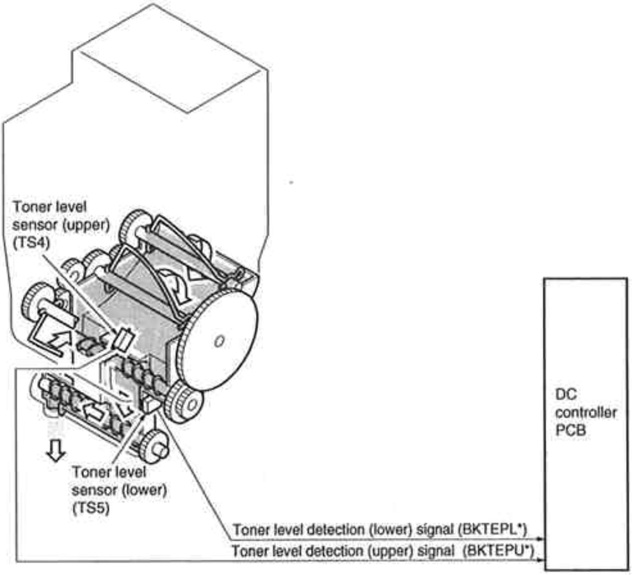

Toner level sensor (upper) (TS4)
Toner level sensor (lower) (TS5)
DC controller PCB
Toner level detection (lower) signal (BKTEPL*)
Toner level detection (upper) signal (BKTEPU*)

Figure 3-550

Toner is supplied to the main hopper as follows:

When a specific period of time passes after toner supply operation, the signal from the sensor is read by the DC controller; if the absence of toner is detected, the sub hopper starts to supply toner.

If the main hopper toner sensor (TS5) detects the absence of toner eight times in a row despite toner supply operation, 'E020' will be indicated on the control panel after copying operation.

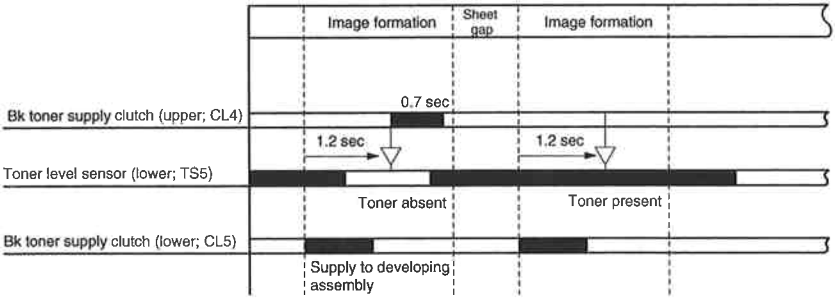
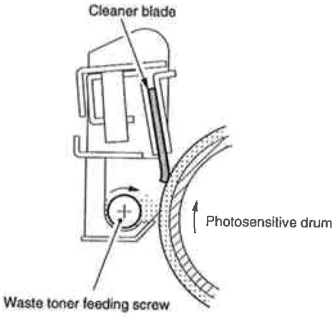


Figure 3-551

F. Cleaning the Photosensitive Drum

The photosensitive drum cleaner is driven by the developing motor (M18Y, 18M, 18C, 18Bk). The waste toner scraped by the cleaning blade is forwarded to the waste toner container by a feeding screw driven by the developing motor and the waste toner motor.


Cleaner blade
Photosensitive drum
Waste toner feeding screw

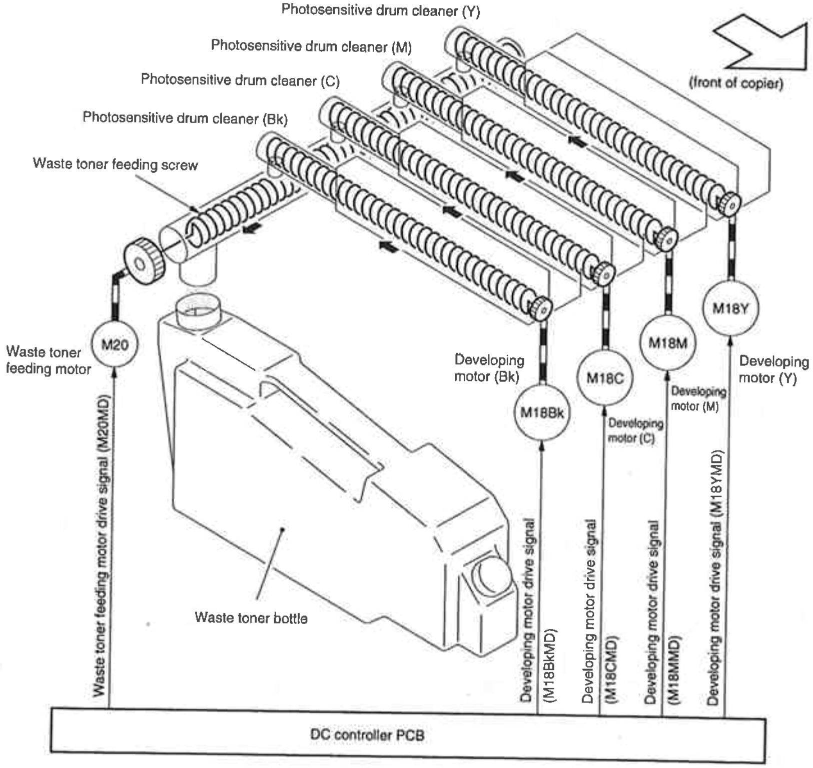

Photosensitive drum cleaner (Y)
Photosensitive drum cleaner (M)
Photosensitive drum cleaner (C)
Photosensitive drum cleaner (Bk)
Waste toner feeding screw
(front of copier)
Waste toner feeding motor
M20
Developing motor (Bk)
M18Bk
M18C
Developing motor (C)
M18M
Developing motor (M)
M18Y
Developing motor (Y)
Waste toner bottle
Waste toner feeding motor drive signal (M20MD)
Developing motor drive signal (M18BkMD)
Developing motor drive signal (M18CMD)
Developing motor drive signal (M18MMD)
Developing motor drive signal (M18YMD)
DC controller PCB

Figure 3-552

If the waste toner pipe becomes clogged for some reason and the waste toner feeding screw will not rotate, leakage of waste toner can occur.

To prevent such a problem, a feeding screw detection mechanism is provided. The gear A (Figure 3-553) used to drive the waste toner feeding screw shifts over the shaft because of the axial force that occurs when the feeding screw locks.

The shift of the gear A is checked by the lock detection switch (SW4). When the gear A pushes the switch, the waste toner feeding motor (M20) stops and 'E013' will be indicated on the control panel.

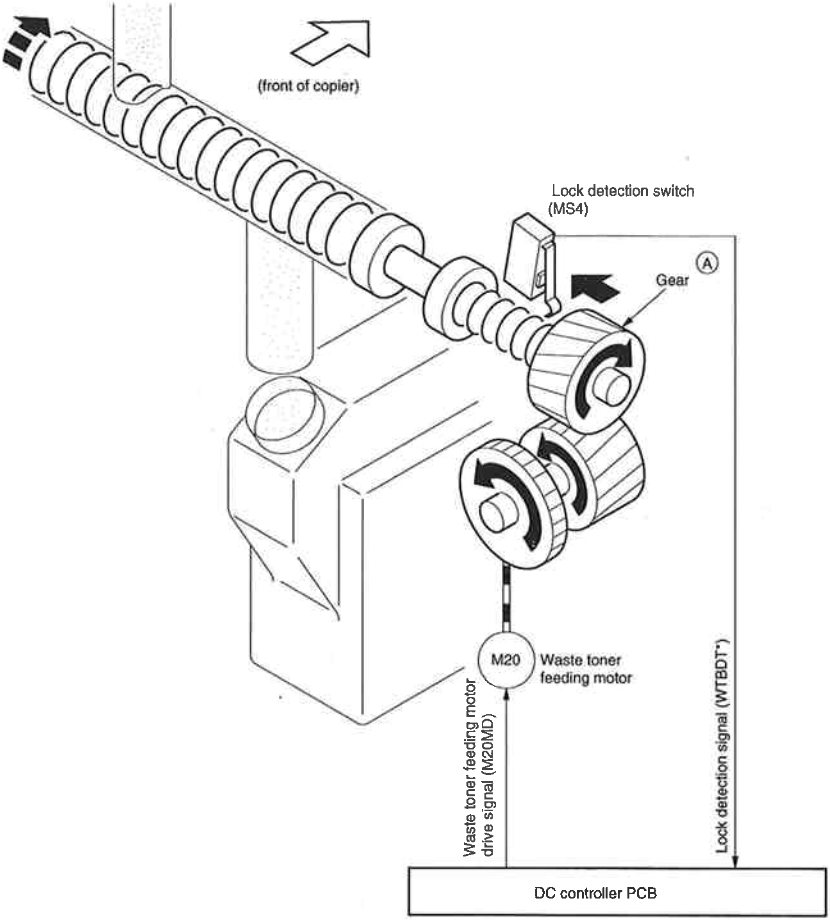

(front of copier)
Lock detection switch (MS4)
Ⓐ
Gear
M20
Waste toner feeding motor
Waste toner feeding motor drive signal (M20MD)
Lock detection signal (WTBDT*)
DC controller PCB

Figure 3-553

G. Controlling the Transfer Unit Charging Mechanism

1. Outline

Figure 3-554 shows the construction of the transfer unit. The transfer current to the transfer blade, static eliminating current to the internal static removing roller, and the charging current to the separation charging corona wire and the pre-fixing charging corona wire are all controlled by the control signals from the DC controller. An AC bias and a DC bias are applied to the separation corona wire; only a DC bias is used for all others.

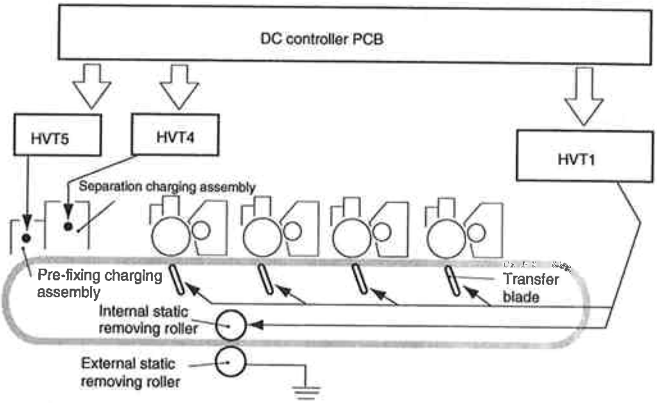

DC controller PCB
HVT5
HVT4
HVT1
Separation charging assembly
Pre-fixing charging assembly
Internal static removing roller
External static removing roller
Transfer blade

Figure 3-554

2. Controlling the Transfer Current

Figure 3-555 shows the circuit that controls the transfer current, and the circuit has the following functions:

- Turns on and off the transfer current.
- Controls the transfer current.

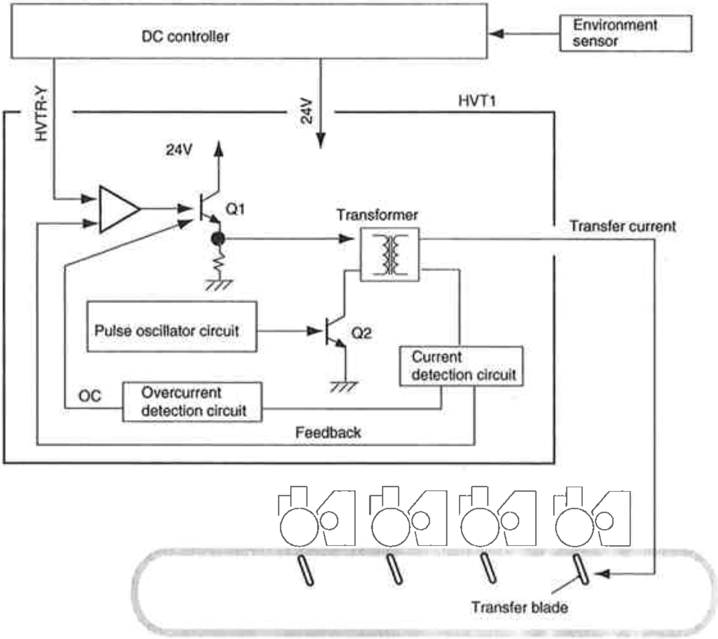

DC controller
Environment sensor
HVTR-Y
24V
HVT1
24V
Q1
Transformer
Transfer current
Pulse oscillator circuit
Q2
Current detection circuit
OC
Overcurrent detection circuit
Feedback
Transfer blade

Figure 3-555

The transfer current is turned on and off by the transfer current drive signal (HVT-Y, HVT-M, HVT-C, HVT-Bk) as follows:

Input in the range of HVTR-Y=0V to 12V

→ Q1 turns on, and a drive voltage suited to the voltage level of HVTR-Y is sent to the transformer.

→ The transformer is driven, and transfer current is generated.

The output of transfer current is monitored by its current value, and the data is fed back to the transistor Q1. The feedback signal is used to control the transformer drive voltage, thereby maintaining the transfer current at a specific level.

If an abnormally high voltage occurs, because of passage of the edge of paper for example, and overcurrent is detected, the OC signal forces Q1 OFF to stop the supply of the transformer drive voltage for 20 msec; the supply will return automatically thereafter.

Further, with the help of the environment sensor, the current value is corrected each time the Start key is pressed.

3. Controlling the Internal Static Eliminating Current

Figure 3-556 shows the circuit that controls the internal static eliminating current, and the circuit has the following functions:

- Turns on and off the internal static eliminating current.
- Executes constant voltage control.

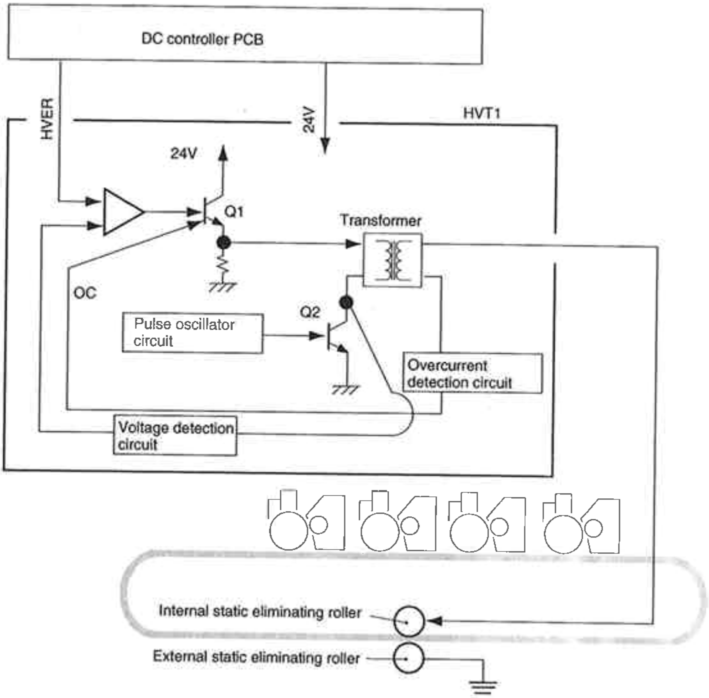

DC controller PCB
HVER
24V
HVT1
24V
Q1
Transformer
OC
Q2
Pulse oscillator circuit
Overcurrent detection circuit
Voltage detection circuit
Internal static eliminating roller
External static eliminating roller

Figure 3-556

The internal static eliminating current is turned on and off by the internal static eliminating current drive signal (HVER) as follows:

Input is made in the range of HVER=0V to 12V

Q1 turns ON to supply a drive voltage suited to the voltage of the HVER to the transformer.

The transformer is driven, and a DC bias suited to the voltage of HVER is generated.

The output of the internal static current is monitored by its voltage value, and the data is sent to the transistor Q1 in the form of feedback. The feedback signal is used to control the transformer drive voltage, thereby maintaining the internal static eliminating current to a specific level.

If an abnormally high voltage occurs and, as a result, an overcurrent is detected, the OC signal turns Q1 off to stop the supply of transformer drive voltage for 20 msec; the supply will return automatically thereafter.

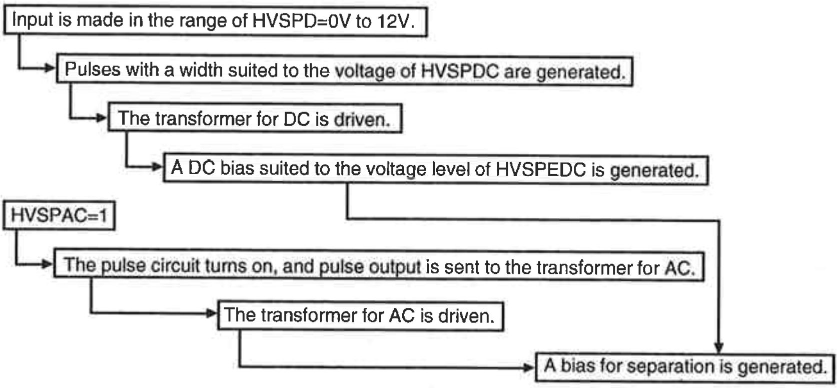
Further, with the help of the environmental sensor, the current value is corrected each time the Start key is pressed.

4. Controlling the Separation Corona Current

Figure 3-557 shows the circuit that controls the separation corona current, and the circuit has the following functions:

- Turns on and off the separation corona current.
- Executes AC bias constant voltage control.
- Executes DC bias constant current control.

The separation corona current is turned on and off by the separation corona current drive signal (HVSPDC, HVSPAC) as follows:


Input is made in the range of HVSPD=0V to 12V.
Pulses with a width suited to the voltage of HVSPDC are generated.
The transformer for DC is driven.
A DC bias suited to the voltage level of HVSPEDC is generated.
HVSPAC=1
The pulse circuit turns on, and pulse output is sent to the transformer for AC.
The transformer for AC is driven.
A bias for separation is generated.

The DC controller PCB generates a DC component control signal (HVSPDC) appropriate to the type of paper (plain, thick, transparency/thin paper) and the data from the environment sensor.

The output of the separation corona current DC component is monitored with reference to its current value, and the data is sent to the transistor Q1 in the form of feedback. This feedback signal is used to control the transformer drive voltage, thereby maintaining the separation corona current to a constant level.

If an abnormally high voltage occurs and, as a result, an overcurrent is detected, the OC signal turns Q2 OFF to stop the supply of transformer drive voltage for 20 msec; the supply will return automatically thereafter.

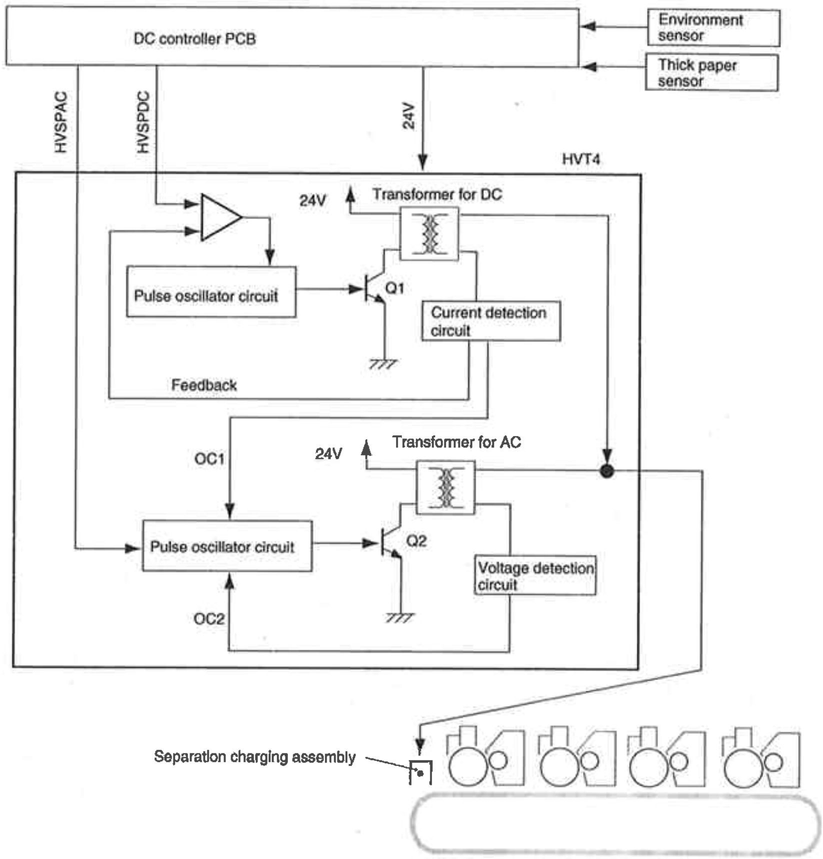

DC controller PCB
Environment sensor
Thick paper sensor
HVSPAC
HVSPDC
24V
HVT4
24V
Transformer for DC
Pulse oscillator circuit
Q1
Current detection circuit
Feedback
OC1
24V
Transformer for AC
Pulse oscillator circuit
Q2
Voltage detection circuit
OC2
Separation charging assembly

Figure 3-557

VI. PICK-UP/FEEDING ASSEMBLY

A. Outline

The CLC1000 uses center reference for feeding paper, i.e., paper moves along the center of the pick-up/feeding path.

The pick-up system includes cassette 1, cassette 2, multifeeder, and holding tray (duplexing unit). (For the paper deck, see "C. Paper Deck.")

Paper from a cassette or the multifeeder is controlled by the registration roller so that its leading edge and the leading edge of the image on the photosensitive drum match and is then sent to the transfer belt.

Upon reaching the transfer belt, the paper is retained against the transfer belt by the work of the charges from the transfer blade; then, transfer of the first color (Y) occurs.

When transfer of the fourth color ends, the paper is moved through the separation, feeding, and fixing assemblies to reach the copy tray (Figure 3-601).

The microprocessor on the DC controller PCB generates the image leading edge signal (ITOP) as soon as the registration roller turns on, and the signal is used for reading image data from the memory PCB.

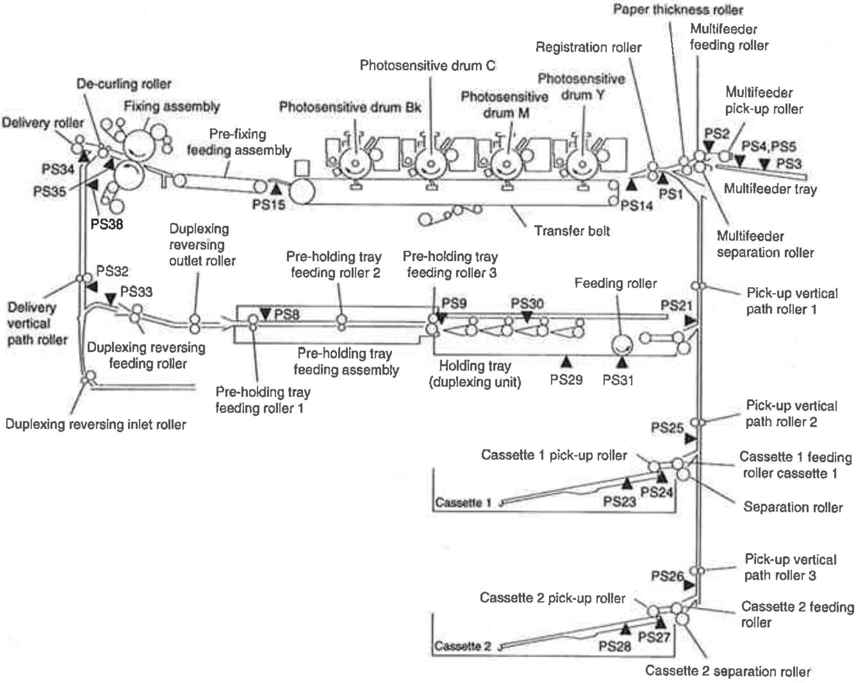

Paper thickness roller
Multifeeder feeding roller
Registration roller
Photosensitive drum C
Photosensitive drum Y
Photosensitive drum M
Photosensitive drum Bk
De-curling roller
Fixing assembly
Delivery roller
Pre-fixing feeding assembly
Multifeeder pick-up roller
PS2
PS4,PS5
PS3
Multifeeder tray
PS1
PS14
PS15
PS34
PS35
PS38
Transfer belt
Multifeeder separation roller
Duplexing reversing outlet roller
Pre-holding tray feeding roller 2
Pre-holding tray feeding roller 3
Feeding roller
PS32
PS33
Delivery vertical path roller
PS8
PS9
PS30
PS21
Pick-up vertical path roller 1
Duplexing reversing feeding roller
Pre-holding tray feeding assembly
Holding tray (duplexing unit)
PS29
PS31
Pre-holding tray feeding roller 1
Duplexing reversing inlet roller
Pick-up vertical path roller 2
PS25
Cassette 1 pick-up roller
Cassette 1 feeding roller cassette 1
PS24
PS23
Cassette 1
Separation roller
Pick-up vertical path roller 3
PS26
Cassette 2 pick-up roller
Cassette 2 feeding roller
PS27
PS28
Cassette 2
Cassette 2 separation roller

Figure 3-601

Notation	Name
PS1	Registration paper sensor
PS2	Multifeeder lifter sensor (upper)
PS3	Multifeeder lifter sensor (lower)
PS4	Multifeeder paper sensor (front)
PS5	Multifeeder paper sensor (rear)
PS8	Pre-holding tray feeding sensor 1
PS9	Pre-holding tray feeding sensor 2
PS14	Post-registration paper sensor
PS15	Separation sensor
PS21	Pick-up vertical path 1 sensor
PS23	Cassette 1 paper sensor
PS24	Cassette 1 lifter sensor
PS25	Pick-up vertical path 2 sensor
PS26	Pick-up vertical path 3 sensor
PS27	Cassette 2 lifter sensor
PS28	Cassette 2 lifter sensor
PS29	Duplexing stacking guide home position sensor
PS30	Holding tray paper sensor 1
PS31	Holding tray paper sensor 2
PS32	Delivery vertical path sensor 2
PS33	Duplexing reversal sensor
PS34	Delivery sensor
PS35	Internal delivery sensor
PS38	Delivery vertical path sensor 1

Table 3-601

B. Pick-Up Assembly

1. Detecting Paper Size

a. Outline

The size of paper in the cassette is checked by the paper width detecting VR and the paper length sensor unit mounted to the rear of the cassette holder.

When the cassette is inserted into the cassette holder, the paper length sensor unit and the paper width detecting VR are actuated by the bosses on the cassette, and the actuation is used to find out the width and the length of the paper and ultimately to identify its size as one of the default sizes.

The CLC1000 identifies the size of paper with reference to width and length and, at the same time, determines where to reverse the scanner and the range of laser exposure.

The bosses used to push the paper length sensor unit and the paper width detecting VR operate in association with the width guide plate and the length guide plate inside the cassette, and adjusting these guides to suit the paper will establish the positions of the bosses (Figure 3-603).

b. Detecting the Size of Paper

The paper length sensor unit consists of two photointerrupters, and the combination of outputs of these two sensors is used to determine the length of paper.

On the other hand, the paper width detecting VR is a variable resistor, and the resistance generated by the VR is used to determine the width of paper.

Figure 3-602 shows the relationship between the paper width and the output of the VR. The proportional relationship is stored in the RAM on the DC controller PCB. You must enter the basic settings if you have replaced the cassette, VR, or DC controller PCB or if you have initialized the RAM on the DC controller. (See chapter 7. II. Standards and Adjustments G. 1. Registering the Cassette/Multifeeder Paper Width Basic Setting.)

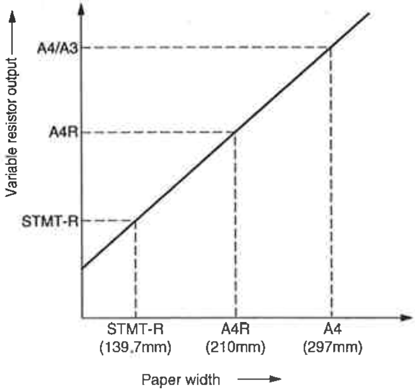


Figure 3-602

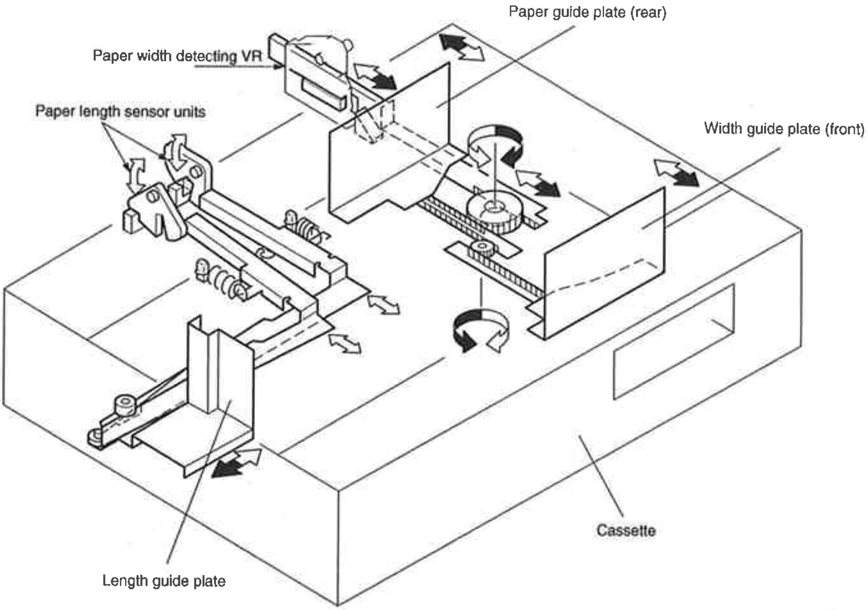

Paper guide plate (rear)
Paper width detecting VR
Paper length sensor units
Width guide plate (front)
Cassette
Length guide plate

Figure 3-603

c. Markings on the Width Guide Rail

You will note paper size positioning holes in the width guide rail found inside the cassette, and these holes are identified by markings A through M as shown in Table 3-602.

Use the markings to find out if the paper guide plate is correctly set to suit the paper being used if a user calls to report skew movement. (This information is not made open to the user.)

Marking	Paper size	Remarks
A	STMT-R	
B	A5-R	
C	B5-R	
D	KLGL-R	
E	GLTR-R	
F	G-LGL	G3
G	A4-R	
H	LGL/LTR-R	
I	FLSC	G2
J	B4/B5	
K	G-LTR	G1
L	279 mm×432 mm (11"×17")/LTR	G5
M	A3/A4	

Table 3-602

d. Paper Size

The CPU on the DC controller PCB determines the size of paper based on the width and the length inputs.

Paper length sensor	SW102	SW101	SW102	SW101	SW102	S2101	SW102	S2101
Signal name	SZ2	SZ1	SZ2	SZ1	SZ2	SZ1	SZ2	SZ1
Paper width sensor Slice level unit: mm ON/OFF	0	0	0	1	1	0	1	1
	A4		–		A3		–	
288.5								
	(G5)		–		279mm×432mm(11"×17")		–	
273.7								
	(G1)		–		–		–	
261.8								
	B5		–		B4		–	
238.0								
	STMT		LTRR		LGL		(G2)	
212.9								
	A5		A4R		–		(G3)	
206.6								
	G-LTRR		–		–			
196.6								
	K-LGLR		–		–		–	
186.0								
	B5R		–		–		–	
165.2								
	A5R		–		–		–	
144.1								
	STMTR		–		–		–	

Table 3-603

The paper sizes given in Table 3-604 are selected in service mode to correspond to the paper sizes for each group (Table 3-604). Those indicated by * are settings made at time of shipment from the factory.

Group		Size
G1	*	G-LTR
		K-LGL
G2	*	FOOLSCAP
		OFFICIO
		E-OFFI
		A-LGL
		A-OFFI
G3	*	G-LGL
		FOLIO
		AUS-FLS
G5	*	LTR
		A-LTR

Table 3-604

e. Registering the Paper Width Basic Settings

See chapter 7. II. Standards and Adjustments G. 1. Registering the Casstte/Multifeeder Paper Width Basic Setting.

2. Cassette Pick-Up Assembly

a. Outline

The CLC1000's pick-up assembly is constructed as shown in Figure 3-604.

The cassette can accommodate as many as 500 sheets of paper (80 g/m^2).

The paper inside the cassette are raised by the lifter and is kept in contact with the pick-up roller.

When the pick-up roller clutch turns on, the pick-up roller rotates to pick up paper. Then, the pick-up roller releasing solenoid turns on so that the pick-up roller leaves the surface of the paper.

After pick-up, a single sheet of paper is forwarded to the feeding path by the feeding roller and the separation roller. Then, the paper is moved as far as the transfer belt through the registration roller by the work of the pick-up vertical path roller.

The notations used for the pick-up clutches and the pick-up roller solenoids of the multifeeder, cassette, and the duplexing unit are as shown in Table 3-605.

Cassette / Name	Multifeeder	Cassette 1	Cassette 2	Duplexing unit
Pick-up roller clutch	CL6	CL12	CL14	CL10
Pick-up roller releasing solenoid	SL5	SL9	SL10	SL8

Table 3-605

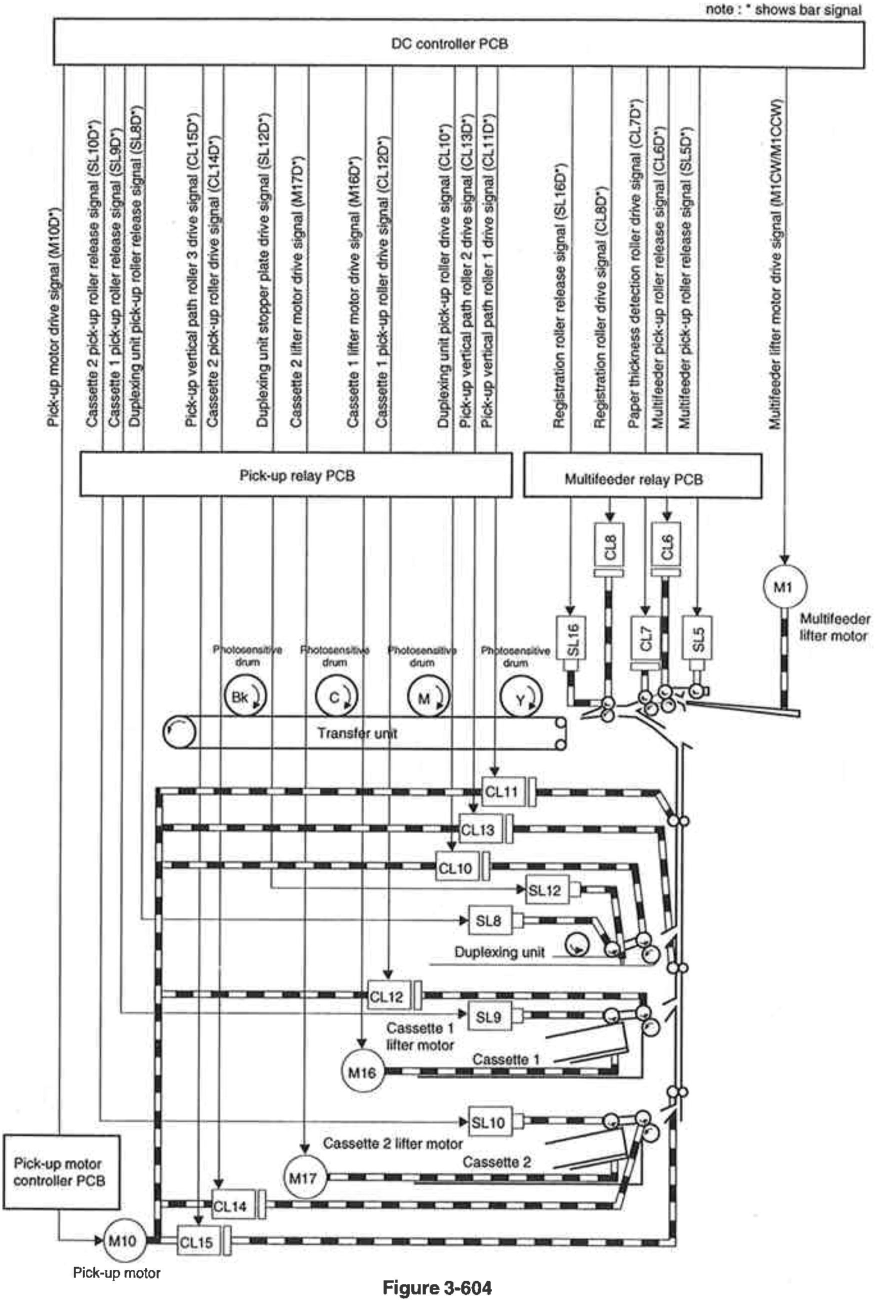

note : * shows bar signal
DC controller PCB
Pick-up motor drive signal (M10D*)
Cassette 2 pick-up roller release signal (SL10D*)
Cassette 1 pick-up roller release signal (SL9D*)
Duplexing unit pick-up roller release signal (SL8D*)
Pick-up vertical path roller 3 drive signal (CL15D*)
Cassette 2 pick-up roller drive signal (CL14D*)
Duplexing unit stopper plate drive signal (SL12D*)
Cassette 2 lifter motor drive signal (M17D*)
Cassette 1 lifter motor drive signal (M16D*)
Cassette 1 pick-up roller drive signal (CL12D*)
Duplexing unit pick-up roller drive signal (CL10*)
Pick-up vertical path roller 2 drive signal (CL13D*)
Pick-up vertical path roller 1 drive signal (CL11D*)
Registration roller release signal (SL16D*)
Registration roller drive signal (CL8D*)
Paper thickness detection roller drive signal (CL7D*)
Multifeeder pick-up roller release signal (CL6D*)
Multifeeder pick-up roller release signal (SL5D*)
Multifeeder lifter motor drive signal (M1CW/M1CCW)
Pick-up relay PCB
Multifeeder relay PCB
CL8
CL6
M1
Multifeeder lifter motor
SL16
CL7
SL5
Photosensitive drum
Photosensitive drum
Photosensitive drum
Photosensitive drum
Bk
C
M
Y
Transfer unit
CL11
CL13
CL10
SL12
SL8
Duplexing unit
CL12
SL9
Cassette 1 lifter motor
Cassette 1
M16
SL10
Cassette 2 lifter motor
Cassette 2
M17
Pick-up motor controller PCB
CL14
M10
CL15
Pick-up motor

Figure 3-604

b. Cassette Lifter Operation

Figures 3-605 and -606 show outlines of cassette lifter operation.

When the cassette is set in the copier, the pick-up roller lowers and the lifter detecting lever leaves the lifter sensor.

The condition turns on the cassette lifer motor, thereby raising the lifter. The cassette lifter motor stops where the cassette lifter sensor can detect the top surface of the stack of paper on the lifter.

When paper runs out and the paper detecting lever leaves the paper sensor, the message 'ADD PAPER' will be indicated on the control panel.

The notations of the lifter motor, cassette lifter sensor, and cassette paper sensor used for the cassettes 1 and 2 are as shown in Table 3-606.

Cassette / Name	Cassette 1	Cassette 2
Cassette lifter motor	M16	M17
Cassette lifter sensor	PS24	PS27
Cassette paper sensor	PS23	PS28

Table 3-606

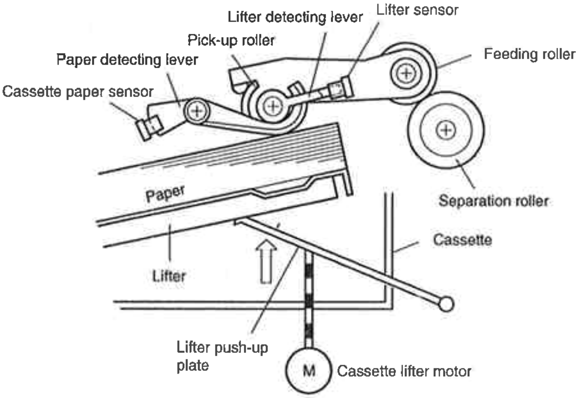

Lifter detecting lever
Lifter sensor
Pick-up roller
Feeding roller
Paper detecting lever
Cassette paper sensor
Paper
Separation roller
Cassette
Lifter
Lifter push-up plate
M
Cassette lifter motor

Figure 3-605

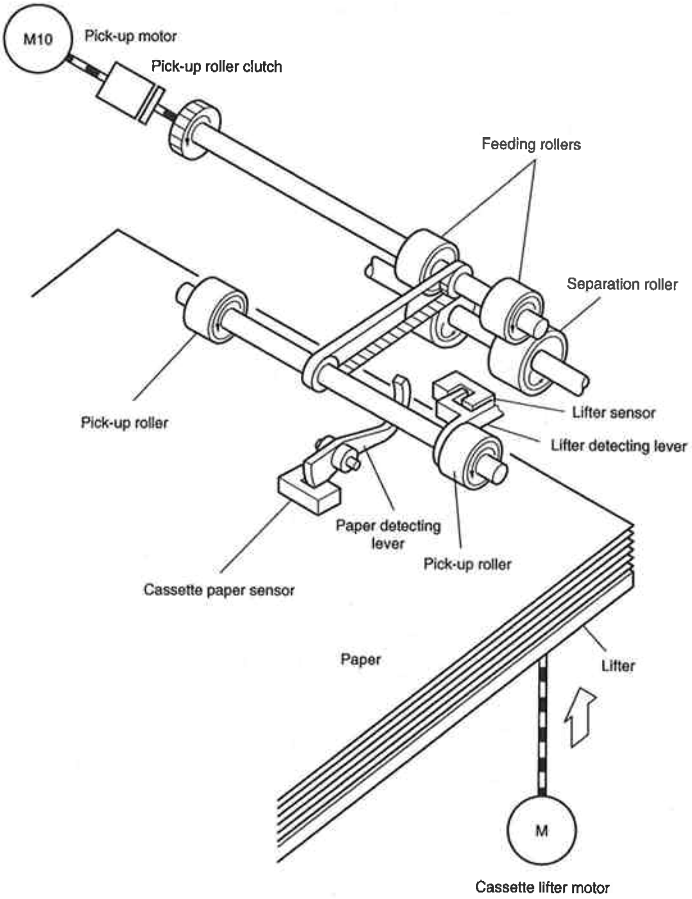

M10
Pick-up motor
Pick-up roller clutch
Feeding rollers
Separation roller
Pick-up roller
Lifter sensor
Lifter detecting lever
Paper detecting lever
Pick-up roller
Cassette paper sensor
Paper
Lifter
M
Cassette lifter motor

Figure 3-606

c. Sequence of Pick-Up Operations

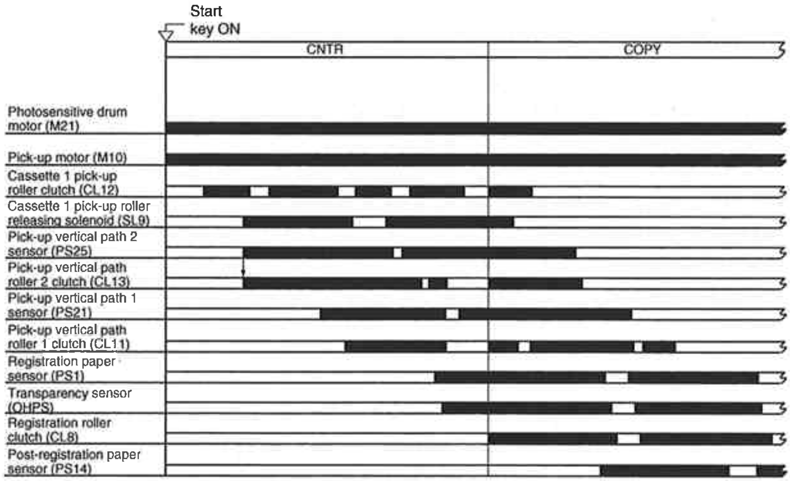

Start
key ON
CNTR
COPY
Photosensitive drum motor (M21)
Pick-up motor (M10)
Cassette 1 pick-up roller clutch (CL12)
Cassette 1 pick-up roller releasing solenoid (SL9)
Pick-up vertical path 2 sensor (PS25)
Pick-up vertical path roller 2 clutch (CL13)
Pick-up vertical path 1 sensor (PS21)
Pick-up vertical path roller 1 clutch (CL11)
Registration paper sensor (PS1)
Transparency sensor (OHPS)
Registration roller clutch (CL8)
Post-registration paper sensor (PS14)

Figure 3-607A (cassette 1)

- Cassette 2, A4/LTR, 2 Copies in Continuous, 4-Color, Direct

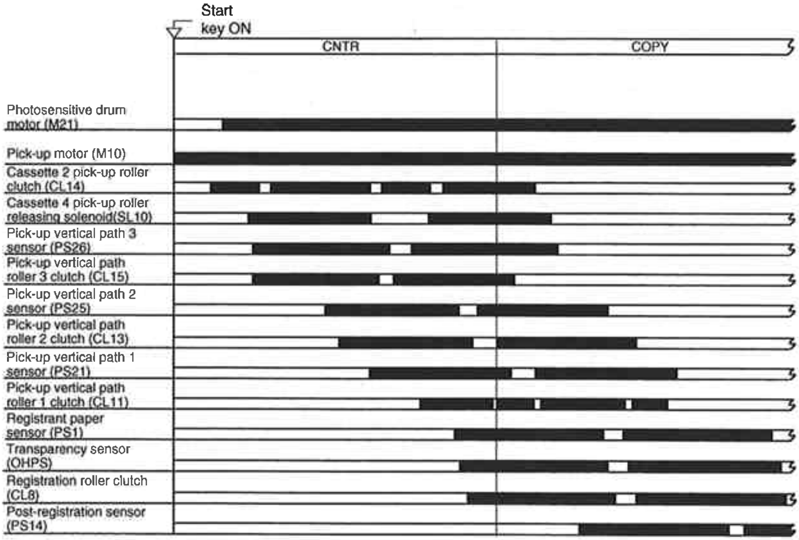

Start
key ON
CNTR
COPY
Photosensitive drum motor (M21)
Pick-up motor (M10)
Cassette 2 pick-up roller clutch (CL14)
Cassette 4 pick-up roller releasing solenoid(SL10)
Pick-up vertical path 3 sensor (PS26)
Pick-up vertical path roller 3 clutch (CL15)
Pick-up vertical path 2 sensor (PS25)
Pick-up vertical path roller 2 clutch (CL13)
Pick-up vertical path 1 sensor (PS21)
Pick-up vertical path roller 1 clutch (CL11)
Registrant paper sensor (PS1)
Transparency sensor (OHPS)
Registration roller clutch (CL8)
Post-registration sensor (PS14)

Figure 3-607B (cassette 2)

3. Multifeeder Pick-Up Assembly

a. Operation

The multifeeder pick-up assembly is constructed as shown in Figure 3-608.

The multifeeder is a mechanism that picks up paper from a stack on its tray for continuous feeding.

As many as 250 sheets of paper (80 g/m²) may be stacked on the tray.

The paper on the tray is detected by the multifeeder paper sensors (PS4, PS5).

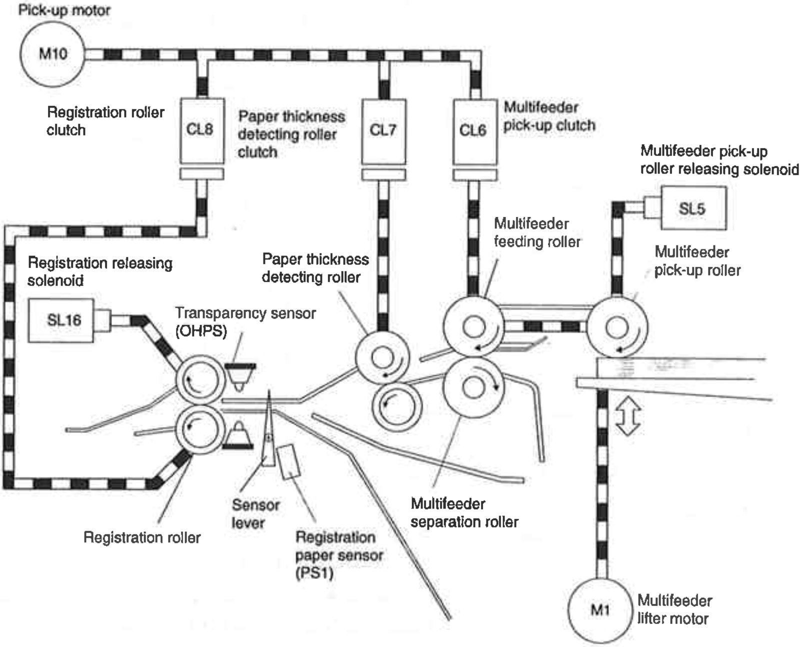
When the Start key is pressed, the stack of paper is raised to the pick-up position by the multifeeder lifter motor (M1).

The pick-up roller is rotated by the drive of the pick-up motor (M10) for pick-up of paper.

Then, the multifeeder pick-up roller releasing solenoid (SL5) turns on, moving the pick-up roller away from the surface of the paper.

A single sheet of paper is moved by the feeding roller and the separation roller to the registration roller by way of the paper thickness detecting roller.

The CLC1000 checks the thickness of paper when picking it up from the multifeeder, thereby identifying it as being plain or thick. (For transparencies, see "4. Picking Up Transparencies.")



Pick-up motor
M10
Registration roller clutch
CL8
Paper thickness detecting roller clutch
CL7
CL6
Multifeeder pick-up clutch
Multifeeder pick-up roller releasing solenoid
SL5
Multifeeder feeding roller
Multifeeder pick-up roller
Registration releasing solenoid
Paper thickness detecting roller
SL16
Transparency sensor (OHPS)
Sensor lever
Registration roller
Registration paper sensor (PS1)
Multifeeder separation roller
M1
Multifeeder lifter motor

Figure 3-608

b. Identifying the Size of Paper in the Multifeeder

The slide guide assembly of the multifeeder tray is equipped with a variable resistor, and the width of paper is detected when the slide guide is moved against the edge of paper.

The length of paper, on the other hand, is checked in reference to how long the registration paper sensor (PS1) remains ON.

The slide guide (front) and the slide guide (rear) each are equipped with a multifeeder paper sensor (PS4, PS5) to check the presence/absence of paper. The message 'ADD PAPER' is indicated on the control panel when either of them is off.

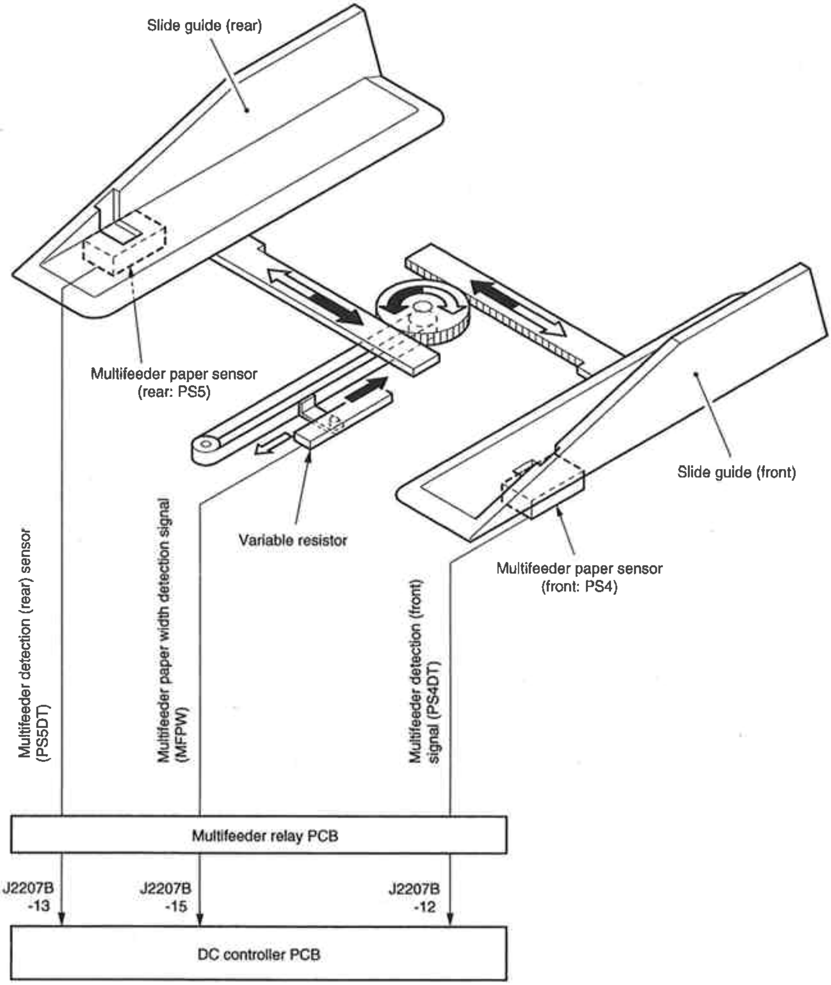

Slide guide (rear)
Multifeeder paper sensor (rear: PS5)
Variable resistor
Slide guide (front)
Multifeeder paper sensor (front: PS4)
Multifeeder detection (rear) sensor (PS5DT)
Multifeeder paper width detection signal (MFPW)
Multifeeder detection (front) signal (PS4DT)
Multifeeder relay PCB
J2207B -13
J2207B -15
J2207B -12
DC controller PCB

Figure 3-609

c. Lifter Operation

Figure 3-610 shows an outline of multifeeder lifter operation.

When the Start key is pressed, the multifeeder lifter motor (M1) rotates clockwise to raise the multifeeder lifter by the lifter plate until the multifeeder lifter sensor (upper: PS2) turns ON.

This ascending movement of the lifter puts the paper on the multifeeder tray in contact with the multifeeder pick-up roller, making it ready for pick-up.

The multifeeder motor rotates in reverse at the following timing so that the multifeeder lifter lowers until the multifeeder lifter sensor (lower: PS3) turns ON.

- When paper is absent (for supply of paper).
- When a jam has occurred (for jam removal).
- When copying ends (for supply of paper or making changes).

If the multifeeder lifter sensor (PS2, PS3) does not turn ON within a specific period of time, 'E040' will be indicated on the control panel.

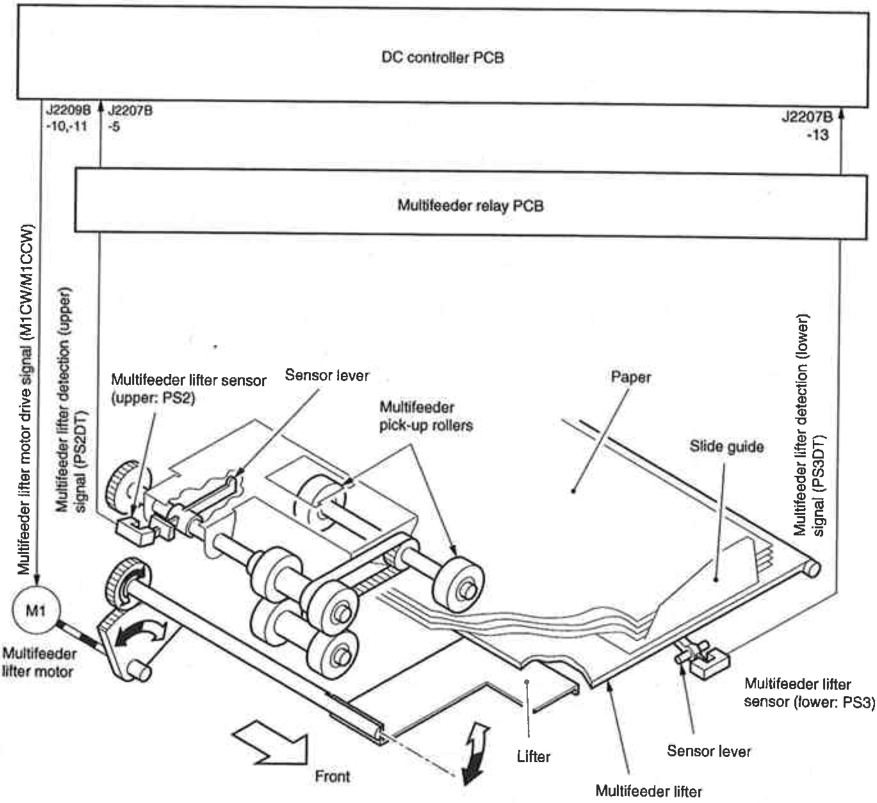

DC controller PCB
J2209B -10,-11
J2207B -5
J2207B -13
Multifeeder relay PCB
Multifeeder lifter motor drive signal (M1CW/M1CCW)
Multifeeder lifter detection (upper) signal (PS2DT)
Multifeeder lifter detection (lower) signal (PS3DT)
Multifeeder lifter sensor (upper: PS2)
Sensor lever
Multifeeder pick-up rollers
Paper
Slide guide
M1
Multifeeder lifter motor
Multifeeder lifter sensor (lower: PS3)
Sensor lever
Lifter
Front
Multifeeder lifter

Figure 3-610

d. Detecting the Thickness of Paper

When picking up paper from the multifeeder, the CLC1000 uses the paper thickness detecting roller and the reflecting type paper thickness sensor in the multifeeder pick-up assembly to check the thickness of paper; in particular, it controls the fixing speed to ensure proper fixing of images on thick paper.

The paper thickness detecting roller rotates by the drive of the pick-up motor (M10) coming by way of the paper thickness detecting roller clutch (CL7).

Under the control of the CPU on the DC controller PCB, the light of the LED of the paper thickness sensor is shone against the paper thickness detecting roller (upper) when paper is not moving through the paper thickness detecting roller. The difference in the angle of the light of the LED reflected by the paper thickness detection roller (upper) lets the paper thickness sensor to identify the shift of the paper detecting roller (upper) caused by the thickness of paper.

The shift is subjected to computation to find out the thickness of paper: 'roller position when paper is present' - 'roller position when paper is absent' = paper thickness.

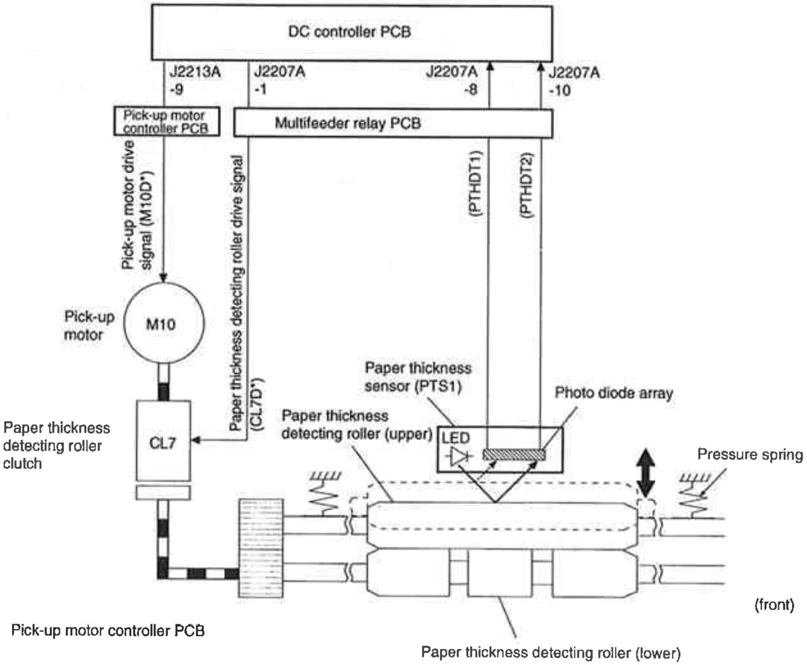

DC controller PCB
J2213A -9
J2207A -1
J2207A -8
J2207A -10
Pick-up motor controller PCB
Multifeeder relay PCB
Pick-up motor drive signal (M10D*)
Paper thickness detecting roller drive signal (CL7D*)
(PTHDT1)
(PTHDT2)
Pick-up motor
M10
Paper thickness sensor (PTS1)
Photo diode array
Paper thickness detecting roller (upper)
LED
Pressure spring
Paper thickness detecting roller clutch
CL7
(front)
Pick-up motor controller PCB
Paper thickness detecting roller (lower)

Figure 3-611

e. Sequence of Operations (multifeeder pick-up)

- Multifeeder, A4/LTR, 2 Copies in Continuous, 4-Color, Direct

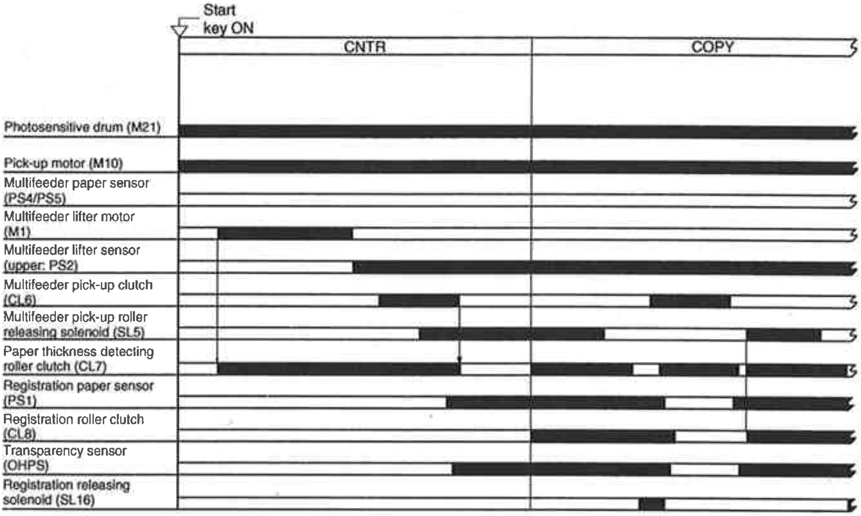


Figure 3-612

4. Picking Up Transparencies

As in the case of plain paper, transparencies may be stacked on the multifeeder or in cassette 1 or cassette 2.

Transparencies stacked on the multifeeder or in cassette 1 or cassette 2 or paper deck are identified as being transparencies or not by the registration paper sensor (PS1) and the transparency sensor in front of the registration roller.

When they are identified as transparencies, the fixing speed is switched to low speed to ensure proper fixing (See chapter 3. G. Fixing/Delivery Assembly).

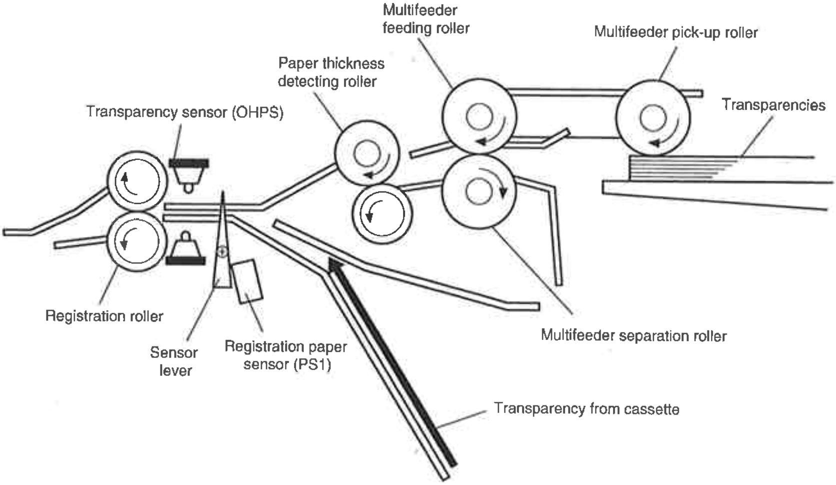

Multifeeder feeding roller
Multifeeder pick-up roller
Paper thickness detecting roller
Transparency sensor (OHPS)
Transparencies
Registration roller
Sensor lever
Registration paper sensor (PS1)
Multifeeder separation roller
Transparency from cassette

Figure 3-613

5. Releasing the Registration Roller

The registration roller is released so as to make up for the minute discrepancy between the speed at which paper is moved by the registration roller and the speed at which it is moved by the transfer belt so as to prevent displacement of the image, which could occur otherwise.

In the case of pick-up from the multifeeder, the registration roller starts to rotate; and, when the paper has moved on the transfer belt, the registration roller releasing solenoid (SL16) turns on.

As a result, the drive of the pick-up motor is transmitted to the registration releasing arm by way of the spring clutch and the registration releasing cam, causing the registration roller (upper) to move up and releasing its pressure. (The registration releasing cam makes a 1/2 rotation when the registration releasing solenoid turns on by the work of the spring clutch.)

The solenoid SL16 is on in the presence of a jam.

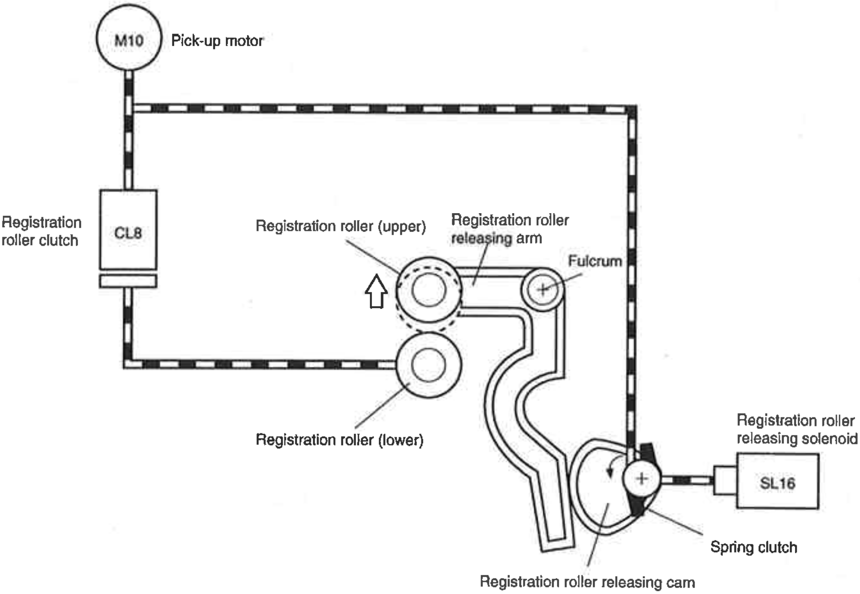

M10
Pick-up motor
Registration roller clutch
CL8
Registration roller (upper)
Registration roller releasing arm
Fulcrum
Registration roller (lower)
Registration roller releasing solenoid
SL16
Spring clutch
Registration roller releasing cam

Figure 3-614

C. Paper Deck

1. Outline

The paper deck can hold as many as 4,000 sheets of paper (A4/LTR/B5; 80 g/m²) at once and picks up and feeds paper to the copier body in response to control signals from the DC controller PCB.

The lifter of the paper deck is driven by the paper deck motor (M8001), and paper is picked up using the drive of the copier's pick-up motor (M10).

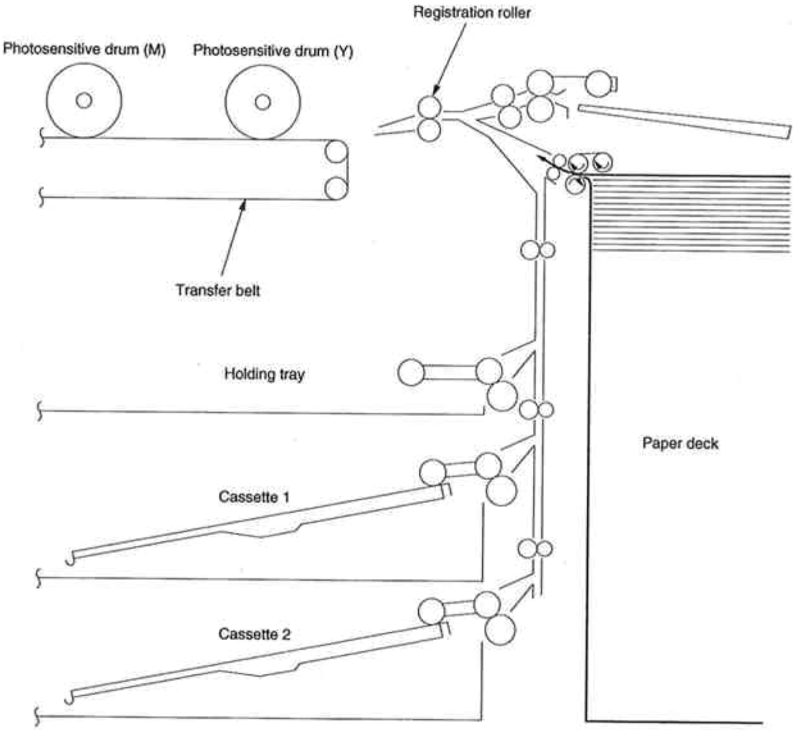

Registration roller
Photosensitive drum (M)
Photosensitive drum (Y)
Transfer belt
Holding tray
Paper deck
Cassette 1
Cassette 2

Figure 3-615

2. Pick-Up Operation

The paper set in the paper deck is raised by the lifter and stopped at a specific position.

When the paper deck pick-up clutch (CL8002) turns on, the pick-up motor rotates to pick up paper. Then, the paper deck pick-up roller releasing solenoid (SL8001) turns on, and the pick-up roller leaves the surface of the paper.

A single sheet of paper is fed forward by the pick-up/feeding roller and the separation roller.

The feeding roller starts to rotate when the paper deck feeding roller clutch (CL8001) turns on to forward the paper to the registration roller.

The registration roller controls the paper so that its leading edge and the image on the photosensitive drum match.

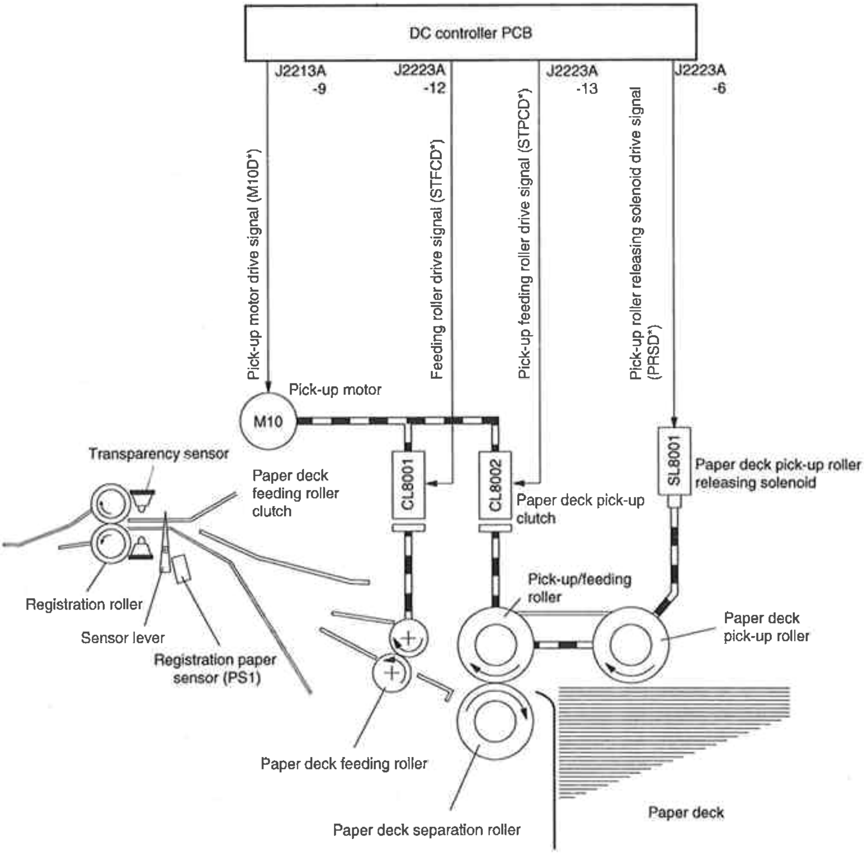

DC controller PCB
J2213A -9
J2223A -12
J2223A -13
J2223A -6
Pick-up motor drive signal (M10D*)
Feeding roller drive signal (STFCD*)
Pick-up feeding roller drive signal (STPCD*)
Pick-up roller releasing solenoid drive signal (PRSD*)
Pick-up motor
M10
CL8001
CL8002
SL8001
Paper deck pick-up roller releasing solenoid
Transparency sensor
Paper deck feeding roller clutch
Paper deck pick-up clutch
Pick-up/feeding roller
Paper deck pick-up roller
Registration roller
Sensor lever
Registration paper sensor (PS1)
Paper deck feeding roller
Paper deck separation roller
Paper deck

Figure 3-616

3. Sequence of Operations (pick-up from paper deck)

- Paper Deck, A4/LTR, 2 Copies in Continuous, 4-Color, Direct

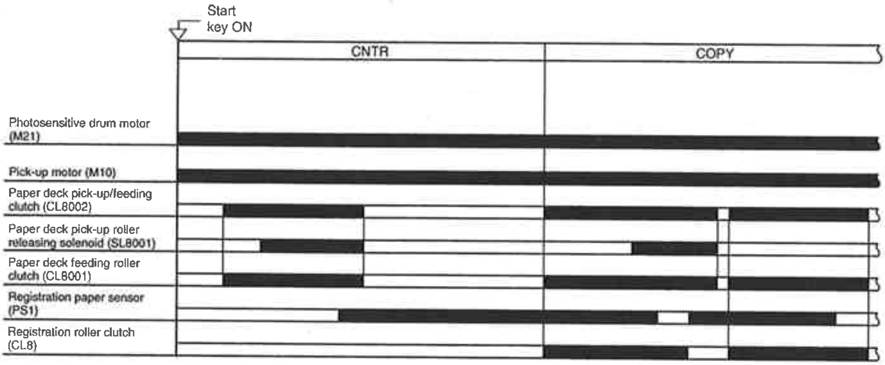

Start
key ON
CNTR
COPY
Photosensitive drum motor (M21)
Pick-up motor (M10)
Paper deck pick-up/feeding clutch (CL8002)
Paper deck pick-up roller releasing solenoid (SL8001)
Paper deck feeding roller clutch (CL8001)
Registration paper sensor (PS1)
Registration roller clutch (CL8)

Figure 3-617

4. Paper Deck Lifter Operation

a. Outline

The lifter of the paper deck receives drive from the paper deck motor (M8001) transmitted through gears and chains and moves up and down as the motor switches its direction of rotation.

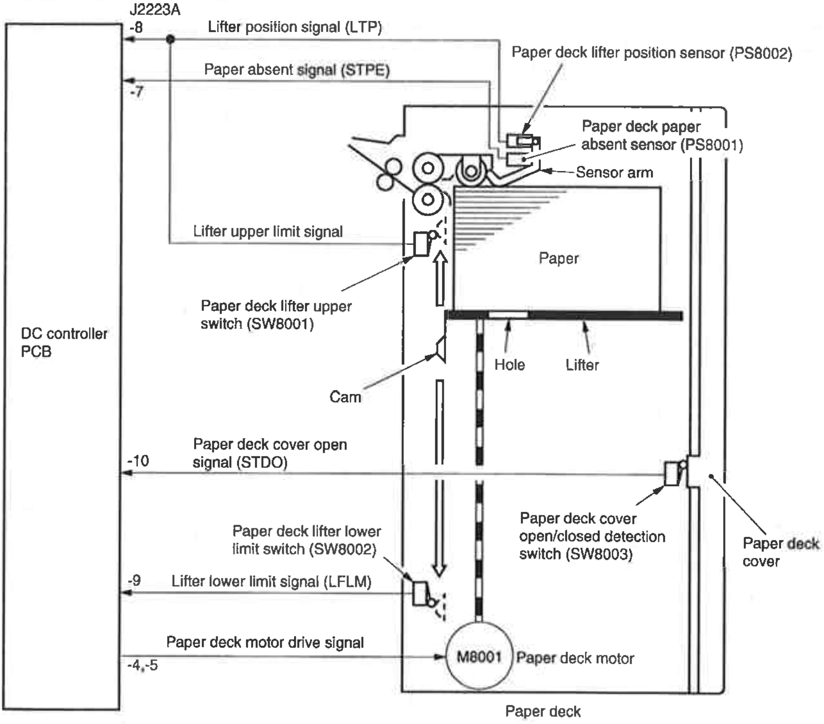
The paper deck motor is turned on/off and its direction of rotation is switched based on combinations of signals from various sensors (Figure 3-618) and switches (PS8002, SW8001, SW8002, SW8003) and control signals from the CPU on the DC controller PCB.

The lifter moves and stops when the lifter position sensor (PS8002) detects the top surface of the paper stacked on the lifter.

When paper runs out and the sensor arm blocks the paper absent sensor (PS8001), the message 'ADD PAPER' will be indicated on the control panel.

At this time, the lifter will move up until it pushes the lifter upper switch (SW8001) and then stop.

On the other hand, the lifter will move down until its cam pushes the lifter lower limit switch (SW8002) and then stop.



J2223A
-8
Lifter position signal (LTP)
Paper deck lifter position sensor (PS8002)
Paper absent signal (STPE)
-7
Paper deck paper absent sensor (PS8001)
Sensor arm
Lifter upper limit signal
Paper
Paper deck lifter upper switch (SW8001)
DC controller PCB
Hole
Lifter
Cam
Paper deck cover open signal (STDO)
-10
Paper deck cover open/closed detection switch (SW8003)
Paper deck cover
Paper deck lifter lower limit switch (SW8002)
-9
Lifter lower limit signal (LFLM)
Paper deck motor drive signal
-4,-5
M8001
Paper deck motor
Paper deck

Figure 3-618

b. Paper Deck Motor Control Circuit

The paper deck motor control circuit is found on the DC controller PCB. See Figure 3-619 for a block diagram.

The combination circuit in the figure consists of various logic circuits, and they combine the output signals from various sensors and the control signals from the microprocessor to generate the lifter up/down signals (STMUP/STMDN).

The two signals are used to activate the motor drive IC to rotate the paper deck motor clockwise or counterclockwise.

An overcurrent detection circuit is provided to force off the paper deck motor if a short-circuit or the like allows an overcurrent to flow into the motor. When the circuit has activated, the copier may be reset by removing the cause and turning off and on the power switch.

Moving the Lifter Up

- The paper deck cover must be closed, i.e., the cover open signal (STDO) is '0'.
- The light-blocking plate must not be over the lifter position sensor and, in addition, the lifter upper limit switch must be off and the lifter position signal (LTP) must be '0'.
- The lifter up/down control signal from the CPU is '0'.
- The motor ON control signal from the CPU is '1'.

As a result of the above conditions, the output signals from the combination circuit will be as follows:

- The lifter up signal (STMUP) will be '1'.
- The lifter down signal (STMDN) will be '0'.

whereupon the lifter starts to move up.

Moving the Lifter Down

- The paper deck cover must be open, i.e., the cover open signal (STDO) is '1'.
- The lifter lower limit switch (SW11) must be off, i.e., the lifter lower limit signal (LFLM) is '1'.

As a result of the above conditions, the output signals from the combination circuit will be as follows:

- The lifter up signal (STMUP) will be '0'.
- The lifter down signal (STMDN) will be '1'.

whereupon the lifter starts to move down.

In Response to a Jam

When a jam occurs, the lifter up/down control signal by the CPU changes from '0' to '1'.

The condition causes the lifter up signal (STMUP) to go '0' and the lifter down signal to go '1', thereby lowering the lifter. At this time, the lifter will not move down to its lowest position but will stop when the top surface of paper lowers a maximum of about 12 mm.

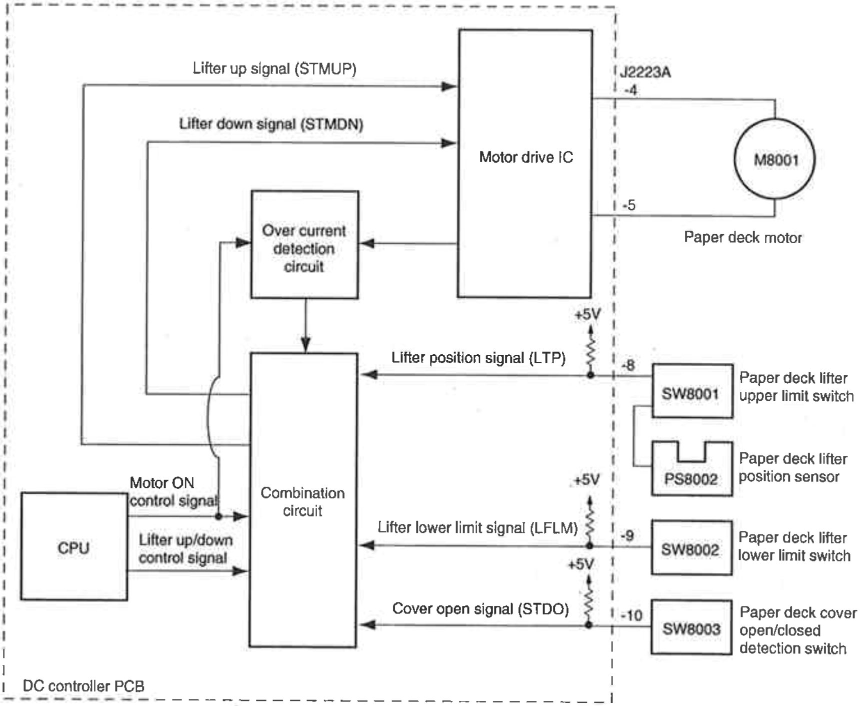

Lifter up signal (STMUP)
Lifter down signal (STMDN)
Motor drive IC
J2223A
-4
-5
M8001
Paper deck motor
Over current detection circuit
+5V
Lifter position signal (LTP)
-8
SW8001
Paper deck lifter upper limit switch
PS8002
Paper deck lifter position sensor
Motor ON control signal
Combination circuit
+5V
CPU
Lifter up/down control signal
Lifter lower limit signal (LFLM)
-9
SW8002
Paper deck lifter lower limit switch
+5V
Cover open signal (STDO)
-10
SW8003
Paper deck cover open/closed detection switch
DC controller PCB

Figure 3-619

D. Duplexing Unit

1. Outline

Paper picked up from the cassette or the multifeeder is forwarded to the delivery vertical path assembly by the delivery paper deflecting plate after fixing. Thereafter, it is moved through the pre-duplexing feeding assembly and to the duplexing feeding assembly inside the duplexing unit.

Inside the duplexing feeding assembly, the three paper deflecting plates are shifted to change the paper path to suit the length of paper for stacking in the duplexing unit stacking assembly (See chapter 3. X. POWER SUPPLY).

The duplexing stacking assembly heater is mounted to prevent curling of both edges of paper.

Figures 3-620 and -621 show diagrams of the duplexing unit and the operation of the duplexing unit.

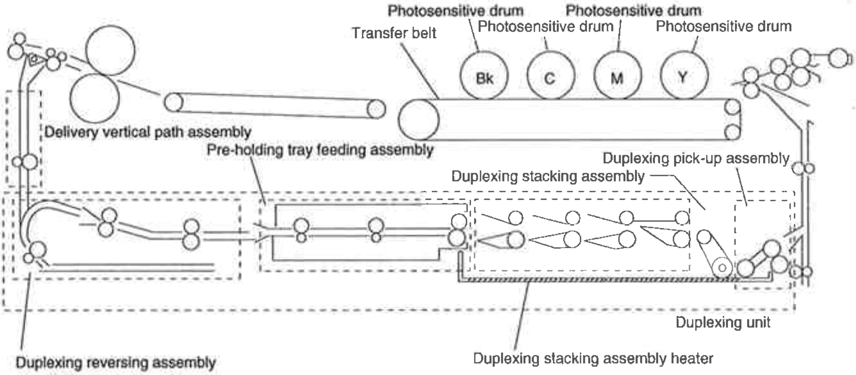

Photosensitive drum
Photosensitive drum
Transfer belt
Photosensitive drum
Photosensitive drum
Bk
C
M
Y
Delivery vertical path assembly
Pre-holding tray feeding assembly
Duplexing pick-up assembly
Duplexing stacking assembly
Duplexing unit
Duplexing reversing assembly
Duplexing stacking assembly heater

Figure 3-620

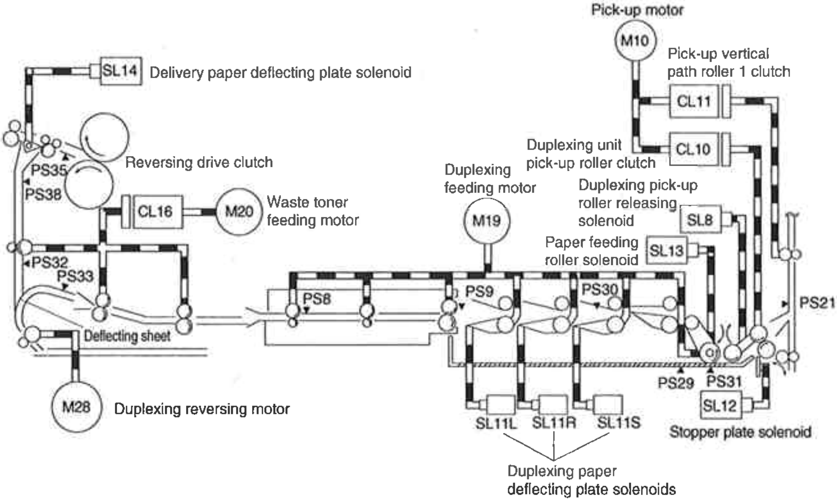

Pick-up motor
M10
Pick-up vertical path roller 1 clutch
CL11
SL14
Delivery paper deflecting plate solenoid
CL10
Duplexing unit pick-up roller clutch
Reversing drive clutch
PS35
PS38
Duplexing feeding motor
Duplexing pick-up roller releasing solenoid
SL8
CL16
M20
Waste toner feeding motor
M19
Paper feeding roller solenoid
SL13
PS32
PS33
PS8
PS9
PS30
PS21
Deflecting sheet
PS29
PS31
SL12
M28
Duplexing reversing motor
SL11L
SL11R
SL11S
Stopper plate solenoid
Duplexing paper deflecting plate solenoids

Figure 3-621

2. Stacking for Two-Sided Copies

When fixing is finished on the first side of paper, the delivery paper deflecting plate (SL14) turns on to shift the delivery paper deflecting plate so that it moves the paper through the delivery vertical path assembly to the duplexing reversing assembly.

When the trailing edge of paper moves past the delivery vertical path sensor (PS32) and a specific period of time passes, the duplexing reversing assembly inlet roller starts to rotate in reverse. The paper then moves to the pre-holding tray feeding assembly through the feeding path that occurs when the deflecting sheet, which has been pressed down by the paper, returns to its original position.

The above operation reverses the paper.

The pick-up roller inside the holding tray (duplexing unit) moves up by the drive from the duplexing unit pick-up solenoid (SL8); the stopper plate, on the other hand, shifts up by the drive of the duplexing unit stopper plate solenoid (SL18).

The above condition is maintained until paper arrives.

When paper is brought to the duplexing unit stacking assembly by the drive of the duplexing feeding motor (M19), the feeding roller lowers to butt the paper against the stopper plate.

When the last paper has been stacked, the stopper plate is shifted down, and then the pick-up roller starts pick-up operation for the second side. See Figures 3-622 and -623 for an outline of stacking operation for two-sided copies.

If an error occurs in the rotation of the duplexing feeding motor, 'E017' will be indicated on the control panel.

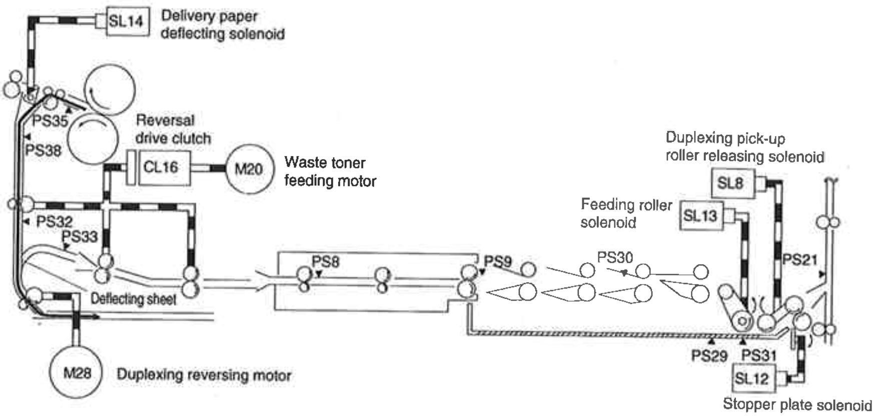

SL14
Delivery paper deflecting solenoid
PS35
PS38
Reversal drive clutch
CL16
M20
Waste toner feeding motor
PS32
PS33
Deflecting sheet
M28
Duplexing reversing motor
PS8
PS9
PS30
Feeding roller solenoid
SL13
Duplexing pick-up roller releasing solenoid
SL8
PS21
PS29
PS31
SL12
Stopper plate solenoid

Figure 3-622

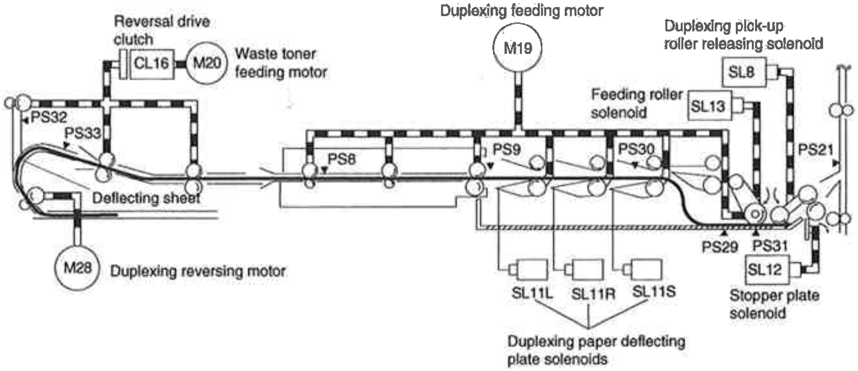

Reversal drive clutch
CL16
M20
Waste toner feeding motor
Duplexing feeding motor
M19
Duplexing pick-up roller releasing solenoid
SL8
Feeding roller solenoid
SL13
PS32
PS33
PS8
PS9
PS30
PS21
Deflecting sheet
PS29
PS31
M28
Duplexing reversing motor
SL12
Stopper plate solenoid
SL11L
SL11R
SL11S
Duplexing paper deflecting plate solenoids

Figure 3-623

3. Changing the Paper Path in the Duplexing Feeding Assembly

The paper path in the duplexing feeding assembly is changed to suit the size of paper (default sizes) in two-sided copying.

A path may be any of four created by three paper deflecting plates.

Each paper deflecting plate is driven by its own solenoid (Table 3-607).

⚠ The CLC1000's two-sided copying mode does not accommodate A5 size, and the paper deflecting plate found on the farthest right of Figure 3-624 is not used.

Ref.	Paper size	Paper deflecting plate solenoid		
		SL11L	SL11L	SL11L
[1]	279 mm x 432 mm (11"17") A3	ON	OFF	OFF
[2]	B4 LGL	OFF	ON	OFF
[3]	A4R LTR-R	OFF	OFF	ON
[4]	LTR A4 B5R/B5	OFF	OFF	OFF

Table 3-607

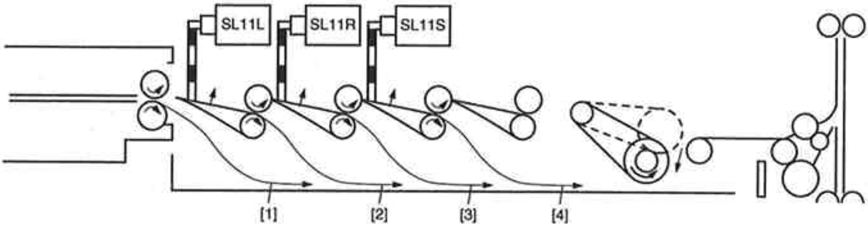


Figure 3-624

4. Paper Guide Plate

a. Outline

The paper guide plates are used to control the size of paper to be stacked in the duplexing unit stacking assembly and to prevent skew movement or jamming during pick-up operation.

The paper guide plates are moved against the edges of paper each time paper arrives.

b. Arranging Sheets by the Paper Guide Plates

When the Start key is pressed while two-sided copying mode is selected, the duplexing stacking guide motor (M23) starts to rotate counterclockwise, and the paper guide plates move in the direction of the arrows in Figure 3-625.

The motor stops when the light-blocking plate of the paper guide plate blocks the duplexing stacking guide home position sensor (PS29).

The DC controller PCB then sends pulses in numbers appropriate to the size of paper to the motor.

In response, the motor starts to rotate clockwise to move the paper guide plate to suit the copy size. Then, the motor rotates counterclockwise to stop the paper size at a point about 8 mm (each side) away from the edge of the coming paper.

When the paper arrives at the duplexing unit stacking assembly, the motor rotates clockwise (moving the guide plate by 8 mm) and counterclockwise (moving the guide plate by 8 mm) to put the paper in position.

When the last paper arrives, the motor rotates clockwise and counterclockwise in preparation for copying on the second side.

While copying on the second side, the motor remains at rest and remains such until the next run in which copying on the first side takes place.

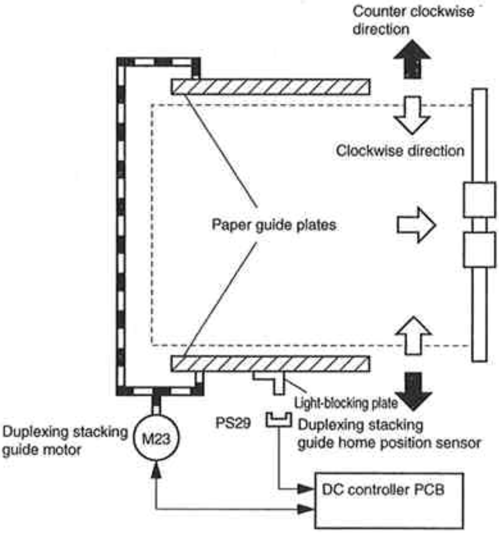

Counter clockwise direction
Clockwise direction
Paper guide plates
Light-blocking plate
PS29
Duplexing stacking guide home position sensor
Duplexing stacking guide motor
M23
DC controller PCB

Figure 3-625 Tray (top view)

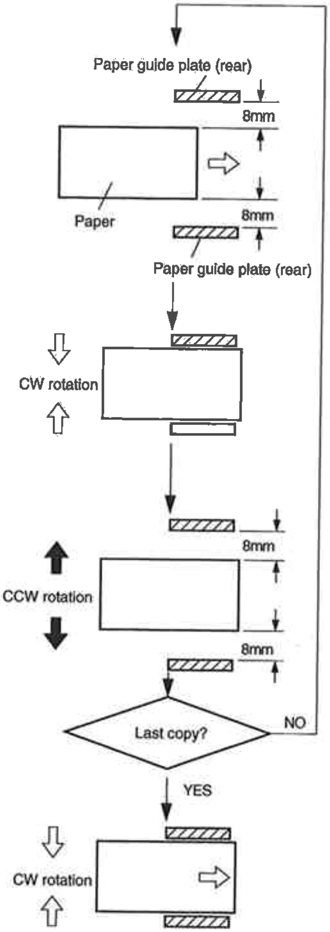

Paper guide plate (rear)
8mm
Paper
8mm
Paper guide plate (rear)
CW rotation
8mm
CCW rotation
8mm
Last copy?
NO
YES
CW rotation

Figure 3-626 Putting Paper in Place

c. Sequence of Operations (1st side)

- Two-Sided (1st side), A4, 2 Copies in Continuous, 4-Color, Direct

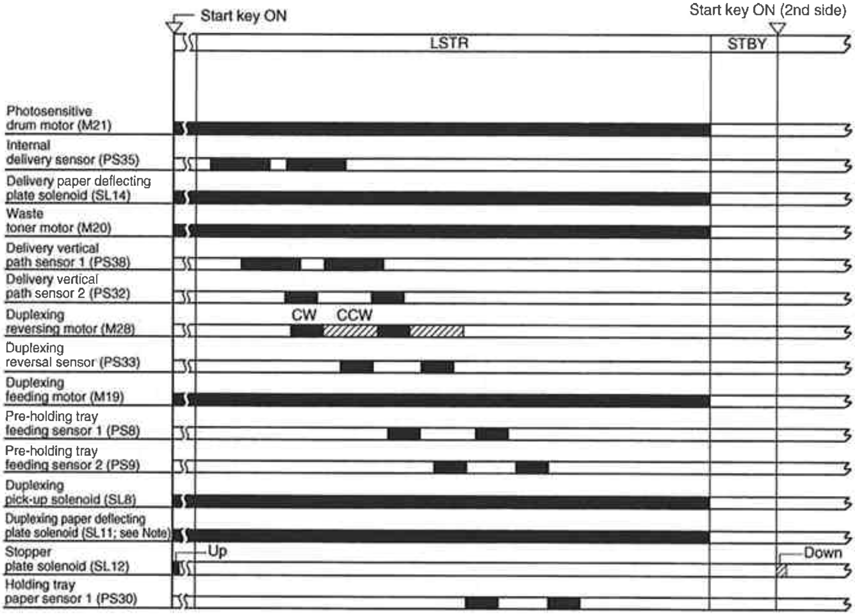


Figure 3-627

5. Pick-Up from the Duplexing Unit

a. Outline

When copying on the second side, paper is picked up from the stack inside the duplexing unit stacking assembly.

The stopper plate shifts down when the Start key is pressed, and the duplexing unit pick-up roller clutch (CL10) turns on. This condition causes the drive of the pick-up motor (M10) to be transmitted to the pick-up roller, starting pick-up operation. After pick-up, the duplexing pick-up roller releasing solenoid (SL8) operates to move the pick-up roller away from the surface of the paper.

A single sheet of paper is fed into the pick-up vertical path assembly by the feeding roller and the separation roller.

Figure 3-628 shows an outline of pick-up operation from the duplexing unit.

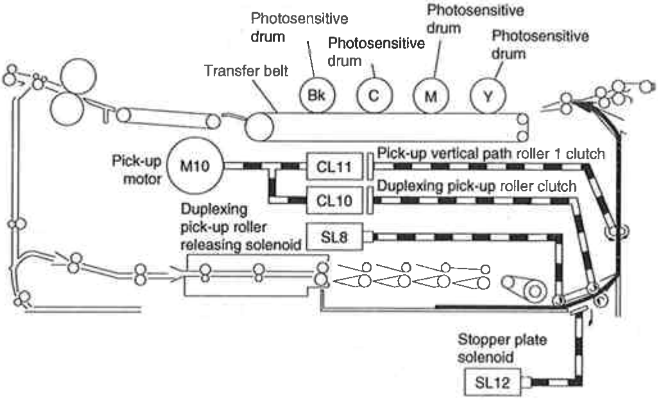

Photosensitive drum
Photosensitive drum
Photosensitive drum
Photosensitive drum
Transfer belt
Bk
C
M
Y
Pick-up motor
M10
CL11
CL10
SL8
Pick-up vertical path roller 1 clutch
Duplexing pick-up roller clutch
Duplexing pick-up roller releasing solenoid
Stopper plate solenoid
SL12

Figure 3-628

b. Sequence of Pick-Up Operations (duplexing unit)

- Duplexing Unit (2nd side), A4/LTR, 2 Copies in Continuous, 4-Color, Direct

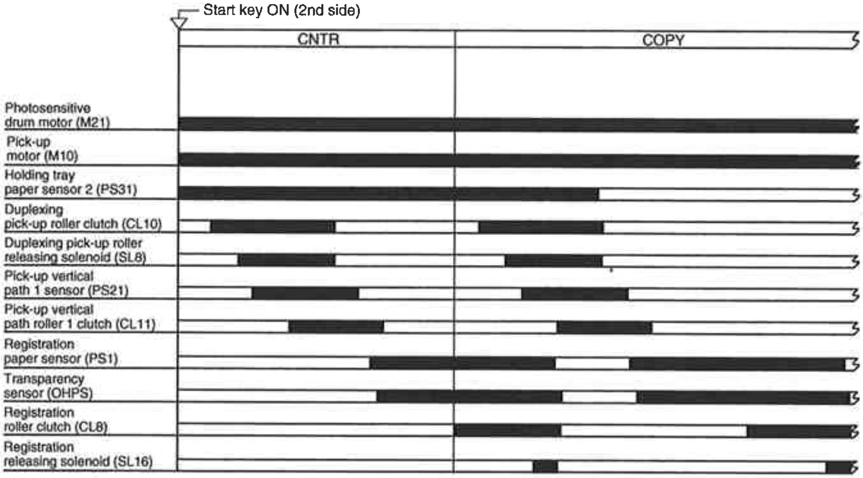


Figure 3-629

E. Transfer Unit

1. Outline

The CLC1000's transfer unit is constructed as shown in Figure 3-630. The transfer unit is used to retain paper coming from the registration roller to the transfer belt by the transfer blade (Y) and, at the same time, to transfer the toner images on the Y, M, C, and Bk photosensitive drums to the paper. Thereafter, the transfer unit operates to feed the paper separated by the transfer belt by the separation charging unit to the pre-fixing feeding assembly.

The transfer unit has the following functions:

- Moves the transfer blade in/out of position.
- Detects the home position of the transfer belt.
- Corrects displacement of the transfer belt.
- Operates the lifter of the transfer belt.
- Cleans the transfer belt.

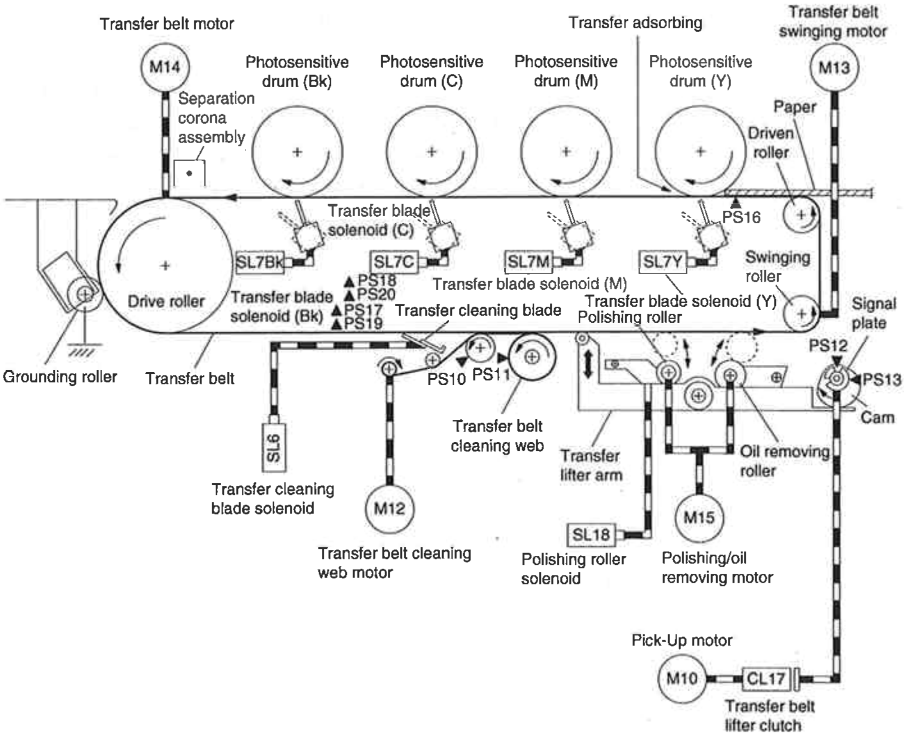

Transfer belt motor
M14
Photosensitive drum (Bk)
Photosensitive drum (C)
Photosensitive drum (M)
Transfer adsorbing
Photosensitive drum (Y)
Transfer belt swinging motor
M13
Separation corona assembly
Paper
Driven roller
Transfer blade solenoid (C)
PS16
SL7Bk
SL7C
SL7M
SL7Y
Swinging roller
Drive roller
PS18
PS20
PS17
PS19
Transfer blade solenoid (Bk)
Transfer blade solenoid (M)
Transfer cleaning blade
Transfer blade solenoid (Y)
Polishing roller
Signal plate
PS12
PS13
Grounding roller
Transfer belt
PS10
PS11
Cam
SL6
Transfer belt cleaning web
Transfer lifter arm
Oil removing roller
Transfer cleaning blade solenoid
M12
M15
SL18
Transfer belt cleaning web motor
Polishing roller solenoid
Polishing/oil removing motor
Pick-Up motor
M10
CL17
Transfer belt lifter clutch

Figure 3-630

Sensor	Name
PS10	Transfer belt cleaning web rotation sensor
PS11	Transfer belt cleaning web length sensor
PS12	Transfer belt lifter sensor 1
PS13	Transfer belt lifter sensor 2
PS16	Transfer belt home position sensor
PS17	Transfer belt edge sensor 1 (front)
PS18	Transfer belt edge sensor 2 (rear)
PS19	Transfer belt edge sensor 3 (front)
PS20	Transfer belt edge sensor 4 (rear)

Table 3-608 Sensors in the Transfer Unit

2. Controlling the Transfer Belt Motor

a. Outline

The transfer belt rotates by the drive of the transfer belt (M14). Figure 3-631 shows the circuit that controls the transfer belt, and the circuit has the following functions:

- Turns on/off the transfer belt motor.
- Executes constant speed control over the transfer belt motor.

b. Controlling the Motor

The DC controller PCB causes the transfer belt motor drive signal (M14D*) to go '0' in response to the activation of the transfer belt motor and, at the same time, generates the transfer belt motor reference pulse signal (M14PLS).

When M14D* and M14PLS are input to the motor drive pulse generator circuit on the transfer belt motor driver PCB, motor drive pulses are sent to the motor drive circuit, causing the transfer belt to rotate at a specific speed.

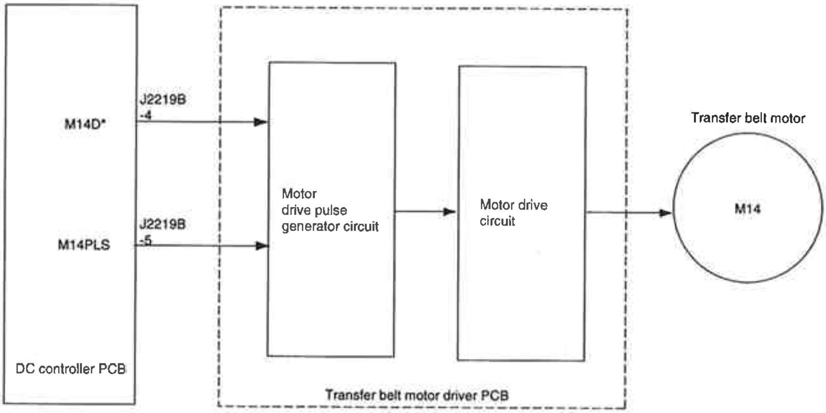

M14D*
J2219B
-4
M14PLS
J2219B
-5
DC controller PCB
Motor
drive pulse
generator circuit
Motor drive
circuit
Transfer belt motor driver PCB
Transfer belt motor
M14

Figure 3-631

3. Putting the Transfer Blade In/Out of Position

As shown in Figure 3-632, four transfer blades are mounted, one each for Y, M, C, and Bk. With the exception of transfer charging operation, the blade is moved away from the transfer belt to limit its load on the belt — as when the last paper has moved past the transfer belt.

When the registration roller clutch (CL8) turns on, the transfer blade is put in transfer position for retention of paper and transfer.

The transfer blade is put in and out of position by the drive of the transfer blade solenoid (SL7Y, SL7M, SL7C, SL7Bk).

The transfer blade solenoid is a latching type, which can hold its steel core out or in by switching the drive signal without the need for retention current.

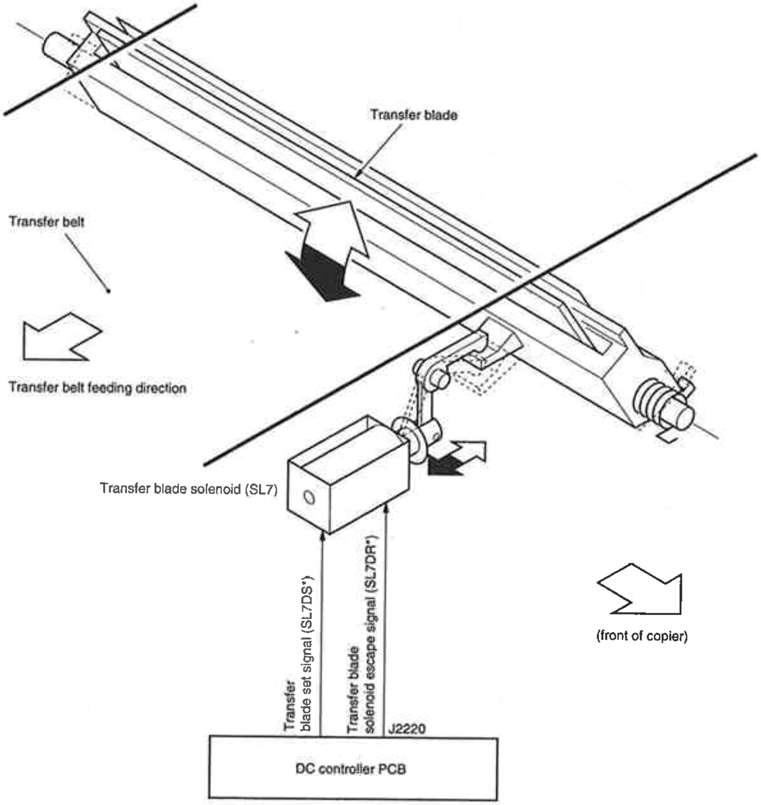

Transfer blade
Transfer belt
Transfer belt feeding direction
Transfer blade solenoid (SL7)
Transfer blade set signal (SL7DS*)
Transfer blade solenoid escape signal (SL7DR*)
J2220
DC controller PCB
(front of copier)

Figure 3-632

4. Detecting the Home Position of the Transfer Belt

The transfer belt is moved by the drive of the transfer belt motor (M14). As many as five (A4/LTR) sheets of paper may be retained on the transfer belt by the charges from the transfer blade.

If paper was put on the transfer belt using the same timing at all times, different sizes and copy modes would put some sheets over the seam of the transfer belt. Transfer on paper kept over a seam would adversely affect the images because of uneven charging efficiency.

To prevent such a problem, a seam detection sticker is put on the transfer belt. When the Start key is pressed, the transfer belt home position sensor (PS16) detects the seal so as to control the timing at which the registration roller turns on, thereby making sure that paper will not be put over the seam. (See Figure 3-633.)

If, for some reason, the transfer belt home position sensor fails to detect the home position of the transfer belt, 'E070' will be indicated on the control panel.

The seam detection sticker on the transfer belt is put on the back of the transfer belt (at the rear).

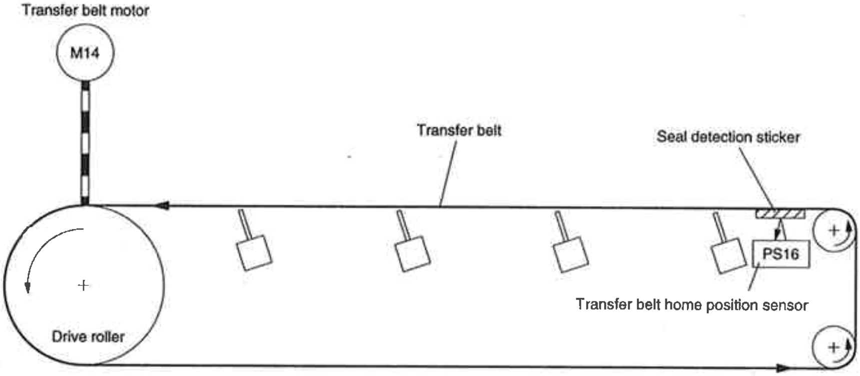


Figure 3-633

5. Point of Retention

In continuous copying, the point of retention on the transfer belt varies depending on the selected copying mode and type of paper. See Table 3-609 for a list of retention modes and Figure 3-634 for points of retention that correspond to the modes. (The table also discusses the degree of shine.)

Source of paper	One-sided/ two-sided	Type of paper	Shine	Mode of retention to transfer belt		
				A4/LTR	A3/279 mmx432 mm (11"x17")	A4R/B4
Cassette	One-sided	Thin paper (64 to 79 g/m^2) Plain paper (80 to 105 g/m^2)	Matte	D	E	F
			Standard	A	B	C
			Glossy	F	G	E
		Transparency	Standard	E	G	G
Paper deck	One-sided	Thin paper (64 to 79 g/m^2) Plain paper (80 to 105 g/m^2)	Matte	D		
			Standard	A		
			Glossy	F		
Duplexing unit	Two-sided (2nd side)	Plain paper (105 g)	Standard	I	H	B
			Glossy	F	G	E
Multifeeder	One-sided/ two-sided (2nd side)	Plain paper (80 to 105 g/m^2) Thin paper (64 to 79 g/m^2)	Standard	I	H	B
			Glossy	F	G	E
		Thick paper (106 to 157 g)	Standard	F	G	E
			Glossy	E	G	G
		Thick paper (158 to 209 g)	Standard	E	G	G
			Glossy	E	G	G
		Transparency	Standard	E	G	G

Table 3-609

The CLC1000 varies the fixing speed to a specific speed to provide appropriate shine on the copies.
A higher fixing speed decreases the shine, producing a matte effect. A lower fixing speed, on the other hand, increases the shine, producing a glossy effect.

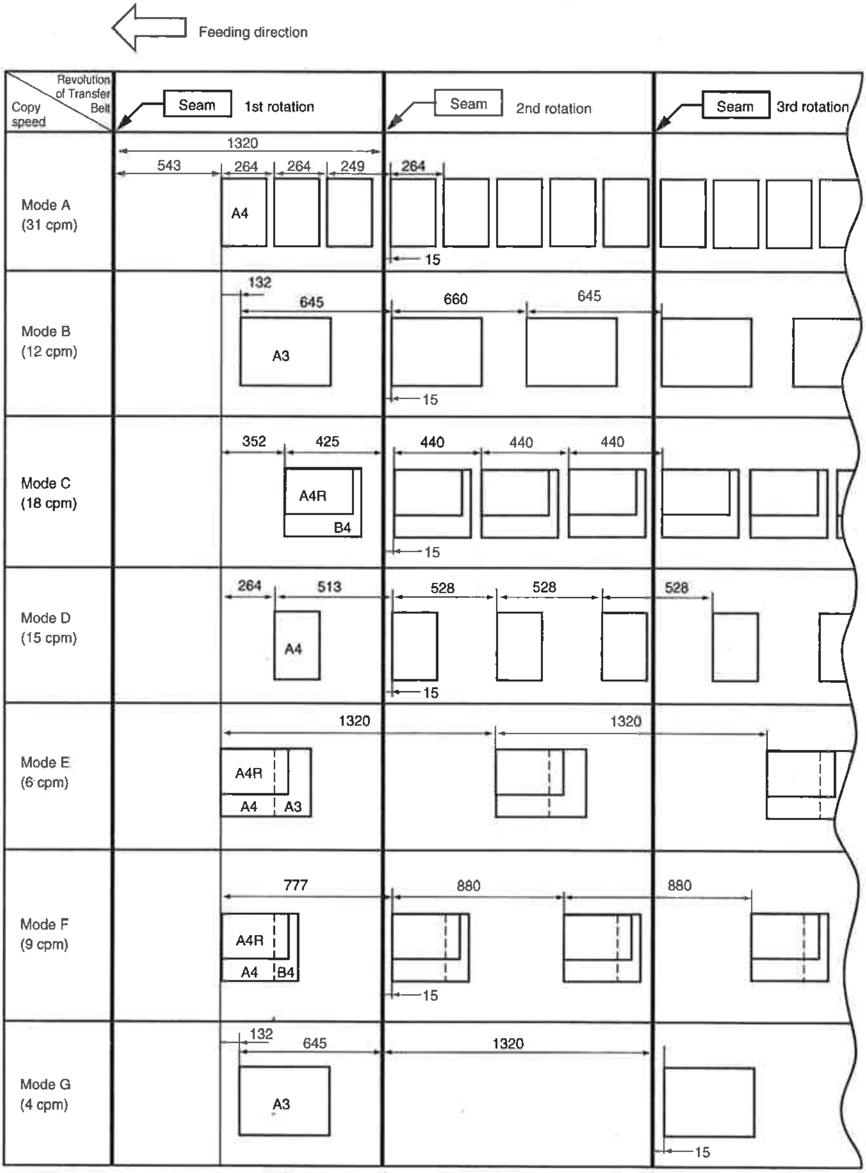

Feeding direction
Revolution of Transfer Belt
Copy speed
Seam
1st rotation
Seam
2nd rotation
Seam
3rd rotation
Mode A
(31 cpm)
1320
543
264
264
249
264
A4
15
Mode B
(12 cpm)
132
645
660
645
A3
15
Mode C
(18 cpm)
352
425
440
440
440
A4R
B4
15
Mode D
(15 cpm)
264
513
528
528
528
A4
15
Mode E
(6 cpm)
1320
1320
A4R
A4
A3
Mode F
(9 cpm)
777
880
880
A4R
A4
B4
15
Mode G
(4 cpm)
132
645
1320
A3
15

Figure 3-634A

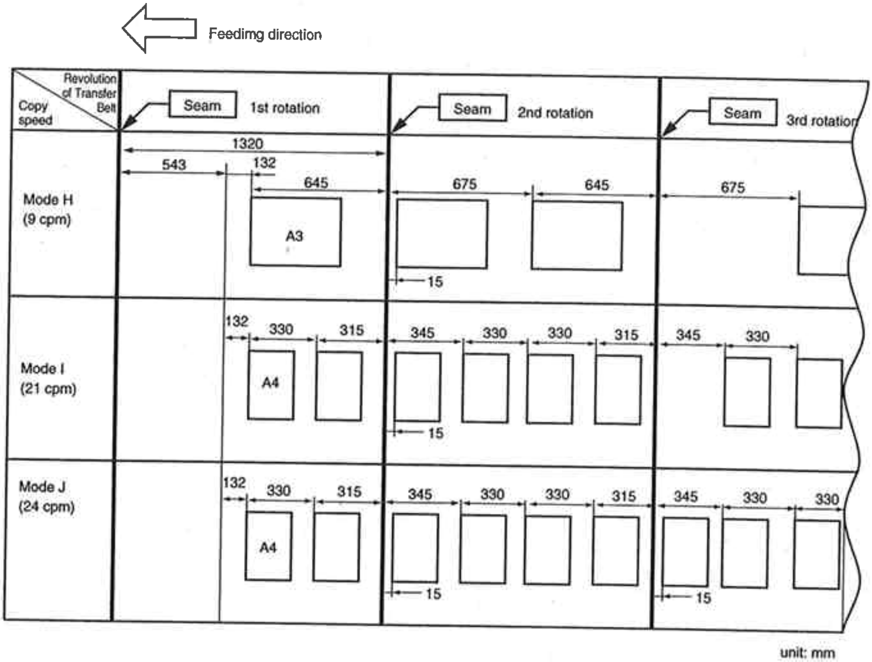

Feedimg direction
Revolution of Transfer Belt
Copy speed
Seam
1st rotation
Seam
2nd rotation
Seam
3rd rotation
Mode H
(9 cpm)
1320
543
132
645
A3
675
645
15
675
Mode I
(21 cpm)
132
330
315
A4
345
330
330
315
15
345
330
Mode J
(24 cpm)
132
330
315
A4
345
330
330
315
15
345
330
330
15
unit: mm

Figure 3-634B

6. Correcting Displacement of the Transfer Belt

When rotated continuously, the transfer belt tends to shift to the front or the rear. The transfer belt end sensor 1 (front; PS17) and the transfer belt end sensor 2 (rear; PS18) are used to monitor such movement of the transfer belt; when displacement occurs, the transfer belt swing motor (M13) tilts the swing roller so that the transfer belt is moved askew in the opposite direction, thereby correcting the displacement.

To prevent full displacement and, thereby damage, of the transfer belt, the transfer belt end sensor 3 (front; PS19) and the transfer belt end sensor 4 (rear; PS20) are used.

See Figures 3-635, -636, and -637 for diagrams of the mechanism used to correct displacement of the transfer belt, from detecting displacement to moving the swing roller.

If the CPU on the DC controller PCB detects the activation of each of the sensors under the following conditions, 'E075' will be indicated on the control panel:

- The transfer belt edge sensor 1/2 (PS17/PS18) detects the end of the transfer belt (sensor lever not over the sensor) longer than a specific period of time.
- The transfer belt end sensor 3/4 (PS19/PS20) detects the end of the transfer belt (sensor lever over the sensor).

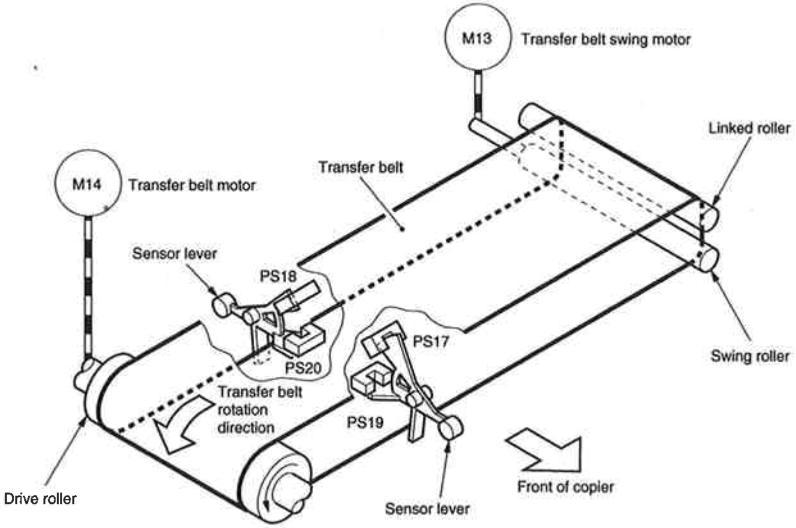

M13
Transfer belt swing motor
Linked roller
M14
Transfer belt motor
Transfer belt
Sensor lever
PS18
PS17
Swing roller
PS20
Transfer belt rotation direction
PS19
Front of copier
Drive roller
Sensor lever

Figure 3-635

a. Displacement to the Rear

The transfer belt swing motor operates the drive arm to move the swing roller to the right, thereby returning the transfer belt to the front.

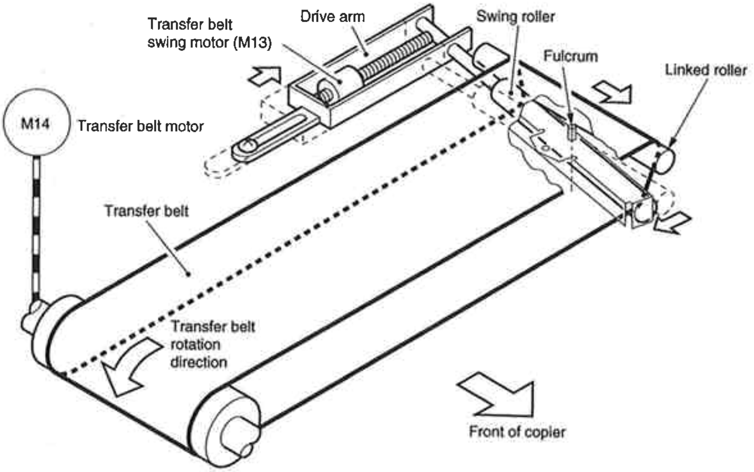

Transfer belt
swing motor (M13)
Drive arm
Swing roller
Fulcrum
Linked roller
M14
Transfer belt motor
Transfer belt
Transfer belt
rotation
direction
Front of copier

Figure 3-636

The transfer belt swing motor is fixed in position to the transfer unit.

b. Displacement to the Front

The transfer belt swing motor operates the drive arm to move the swing roller to the left, thereby returning the transfer belt to the rear.

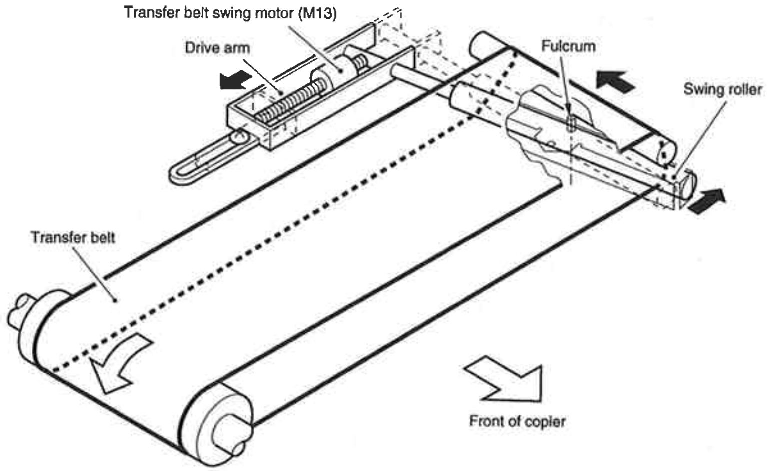

Transfer belt swing motor (M13)
Drive arm
Fulcrum
Swing roller
Transfer belt
Front of copier

Figure 3-637

7. Operation of the Transfer Belt Lifter

A mechanism is needed to prevent adhesion of toner on the photosensitive drum to the transfer belt when the density of Bk toner is measured (See chapter 3. E. Developing Assembly, 4-e. Measuring the Toner by the SALT Sensor). To prevent adhesion, the drive of the pick-up motor (M10) is transmitted to the cam through the transfer belt lifter clutch (CL17), thereby lowering (moving away) the transfer belt by the transfer lifter arm.

When the density of Bk toner has been measured, the transfer belt is moved up back to the point of transfer.

The lifter movement is monitored with reference to the light-blocking plate (mounted to the cam shaft) detected by the transfer belt lifter sensor 1 (PS12) and the transfer belt lifter sensor 2 (PS13). (See Table 3-610.)

If the transfer belt lifter does not reach a specific point over a specific period of time after the transfer belt lifter clutch has turned on, 'E074' will be indicated on the control panel.

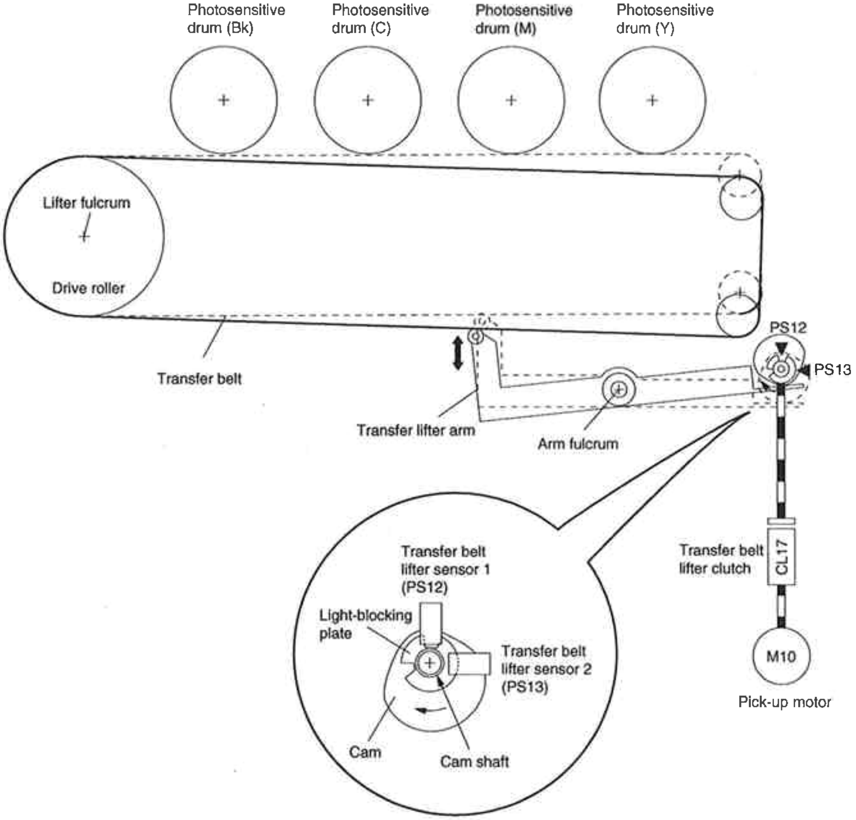

Photosensitive drum (Bk)
Photosensitive drum (C)
Photosensitive drum (M)
Photosensitive drum (Y)
Lifter fulcrum
Drive roller
Transfer belt
Transfer lifter arm
Arm fulcrum
PS12
PS13
Transfer belt lifter clutch
CL17
M10
Pick-up motor
Transfer belt lifter sensor 1 (PS12)
Light-blocking plate
Transfer belt lifter sensor 2 (PS13)
Cam
Cam shaft

Figure 3-638

	Transfer belt position	
	Lower (escape) position	Upper (normal) position
Transfer belt lifter sensor 1 (PS12)	H	L
Transfer belt lifter sensor 2 (PS13)	L	H

H: Light-blocking plate over the sensor.

Table 3-610

8. Cleaning the Transfer Belt

a. Outline

To prevent soiling of the transfer belt with toner and fixing oil, a cleaning mechanism is installed. (See Figure 3-639.)

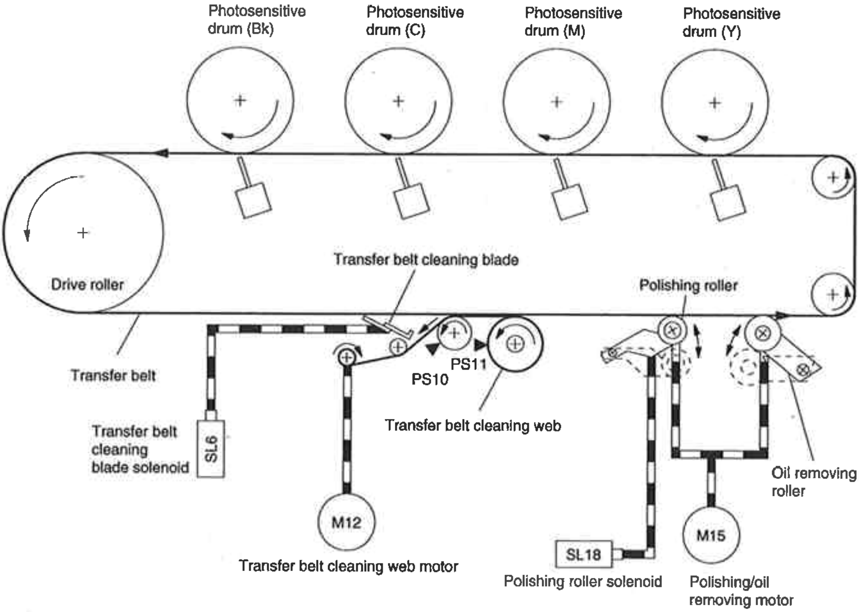

Photosensitive drum (Bk)
Photosensitive drum (C)
Photosensitive drum (M)
Photosensitive drum (Y)
Drive roller
Transfer belt cleaning blade
Polishing roller
Transfer belt
Transfer belt cleaning blade solenoid
SL6
PS11
PS10
Transfer belt cleaning web
Oil removing roller
M12
Transfer belt cleaning web motor
SL18
Polishing roller solenoid
M15
Polishing/oil removing motor

Figure 3-639

b. Transfer Cleaning Blade

The transfer cleaning blade is used to remove toner from the transfer during image position correction. (See Chapter 3. IV. G. Image Position Correction.)

The cleaning blade is set to its cleaning position by the drive of the transfer cleaning blade solenoid (SL6) only at the time of image position correction.

Once set to position, the cleaning blade remains as is but moves away from the transfer belt (released) over the seam.

The transfer cleaning blade solenoid is a latching type, which can keep its steel core out or in to suit either of two drive signals without the need for retention current.

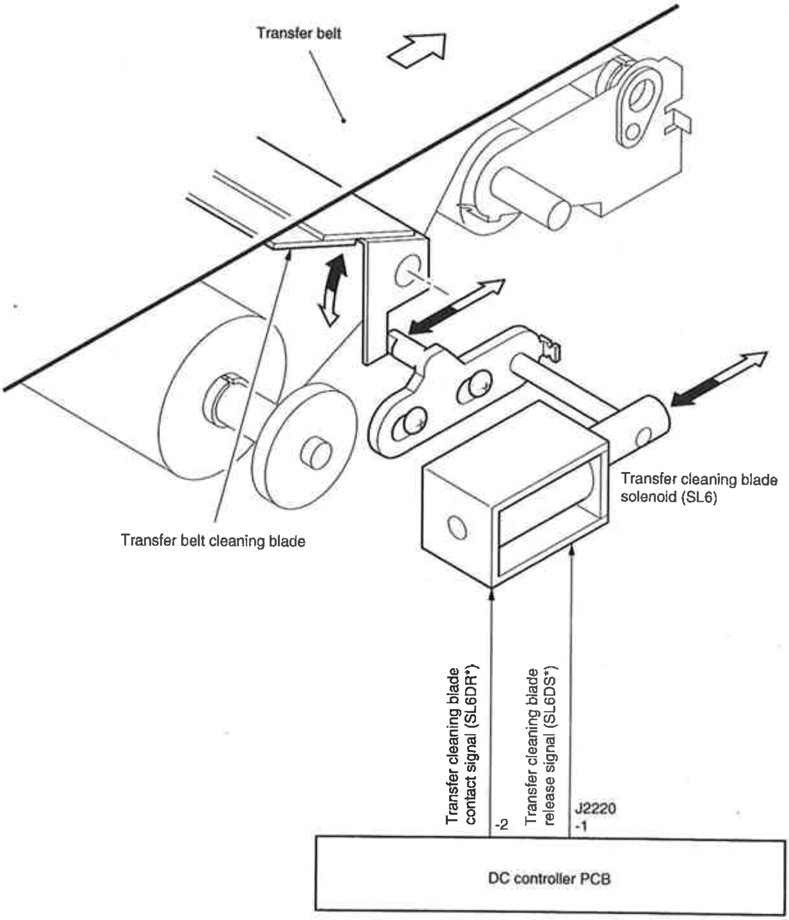

Transfer belt
Transfer cleaning blade solenoid (SL6)
Transfer belt cleaning blade
Transfer cleaning blade contact signal (SL6DR*)
Transfer cleaning blade release signal (SL6DS*)
-2
J2220
-1
DC controller PCB

Figure 3-640

c. Transfer Belt Cleaning Web

The transfer belt cleaning web keeps removing dirt (toner) from the transfer belt at all times.

Depending on the timing, the web is fed about 4 mm at the end of a job when the cumulative reading of sheet-to- sheet times reaches 524 sec.

In the case of continuous copying, on the other hand, the web is fed about 4 mm when SALT is executed (every 100 sheets).

The rotation of the web motor is detected by the transfer belt cleaning web rotation sensor (PS10), which monitors the clock plate on the external static eliminating roller shaft.

The length of the web is monitored by the transfer belt cleaning web length sensor (PS11) mounted to the web feeding roller assembly. After indicating a message, the web rotation sensor (PS10) will detect faulty rotation of the web motor if the web runs out because of continued copying, indicating 'E076' on the message panel of the control panel.

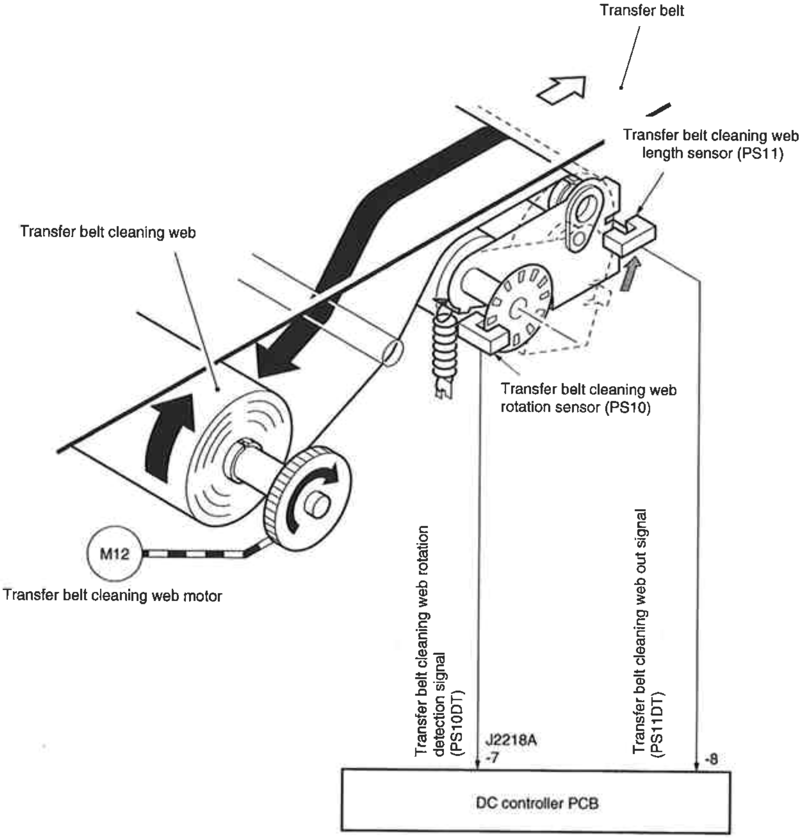

Transfer belt
Transfer belt cleaning web length sensor (PS11)
Transfer belt cleaning web
Transfer belt cleaning web rotation sensor (PS10)
M12
Transfer belt cleaning web motor
Transfer belt cleaning web rotation detection signal (PS10DT)
Transfer belt cleaning web out signal (PS11DT)
J2218A
-7
-8
DC controller PCB

Figure 3-641

d. Polishing Roller

The polishing roller polishes the surface of the transfer belt to prevent adhesion of fixing oil to the photosensitive drum, particularly in two-sided copying mode, thereby preventing foggy images.

The transfer belt is polished in response to a press on the power switch after having made 5,000 copies (cumulative), and the operation is continued until the transfer belt has made 30 rotations.

The polishing roller is butted against the transfer belt when the polishing/oil removing motor (M15) rotates clockwise and the polishing roller solenoid (SL18) turns on, rotating the cam through the control ring and operating the push-on spring.

The polishing roller is moved away from the transfer belt when the solenoid turns off to move the cam before it meets the seam.

The polishing roller rotates slightly to change its position of contact against the transfer belt when the operation of the transfer belt lifter pushes the one-way clutch lever.

If the polishing/oil removing motor rotation speed deviates because of an error, 'E018' will be indicated on the control panel.

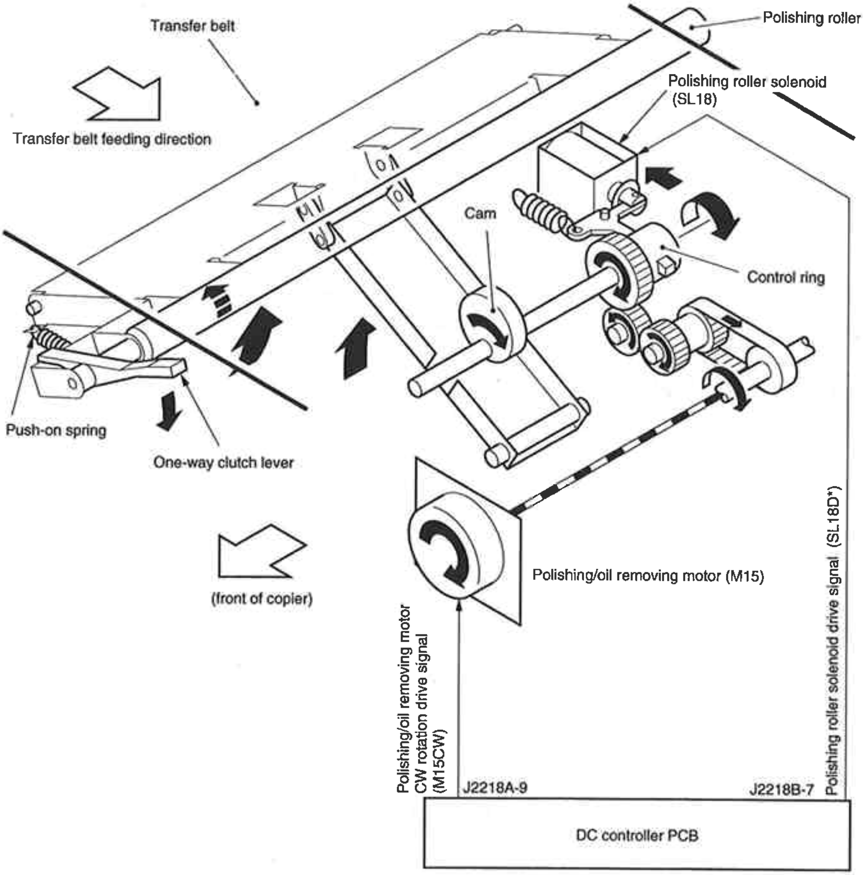

Transfer belt
Transfer belt feeding direction
Polishing roller
Polishing roller solenoid (SL18)
Cam
Control ring
Push-on spring
One-way clutch lever
(front of copier)
Polishing/oil removing motor (M15)
Polishing/oil removing motor CW rotation drive signal (M15CW)
Polishing roller solenoid drive signal (SL18D*)
J2218A-9
J2218B-7
DC controller PCB

Figure 3-642

e. Oil Removing Roller

In two-sided copying mode, the side of paper which has been fixed with an image comes into contact with the transfer belt, leaving fixing oil on the belt. If the transfer belt was allowed to rotate as is, the fixing oil would move on to the photosensitive drum, adversely affecting the next copy image (e.g., fogging).

To prevent such a problem, the oil removing roller is used to remove fixing oil from the transfer belt in two-sided copying mode or when paper is picked up from the multifeeder.

The oil removing roller is rotated and butted against the transfer belt when the polishing/oil removing motor (M15) rotates counterclockwise.

The oil removing roller is released as the transfer belt is moved down by the movement of the transfer belt lifter.

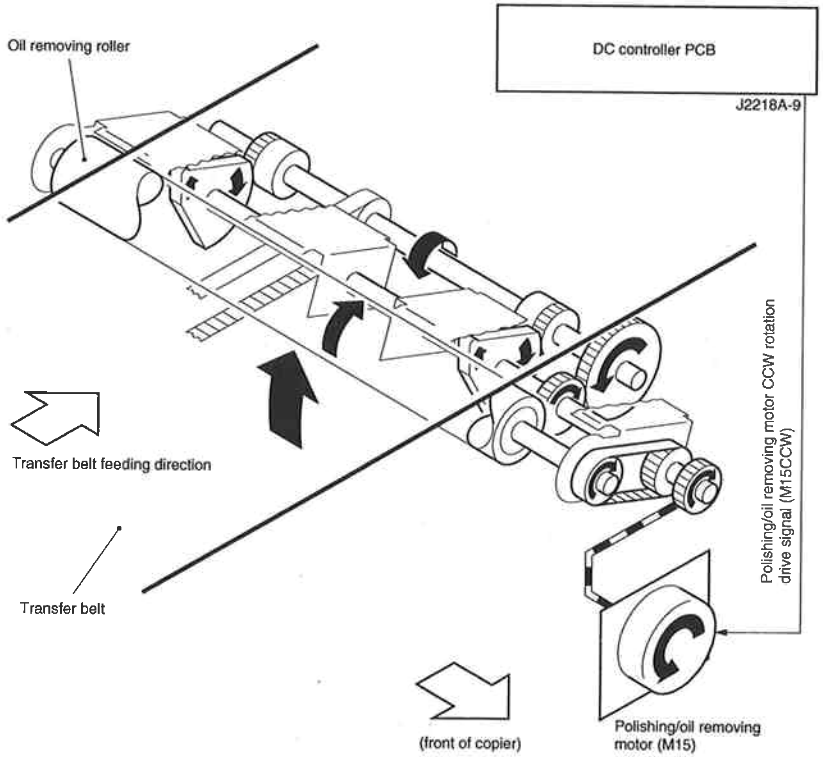

Oil removing roller
DC controller PCB
J2218A-9
Polishing/oil removing motor CCW rotation drive signal (M15CCW)
Transfer belt feeding direction
Transfer belt
(front of copier)
Polishing/oil removing motor (M15)

Figure 3-643

f. Sequence of Operations (transfer unit)

- Multifeeder, A4/LTRL, 2 Copies in Continuous, 4-Color, Direct

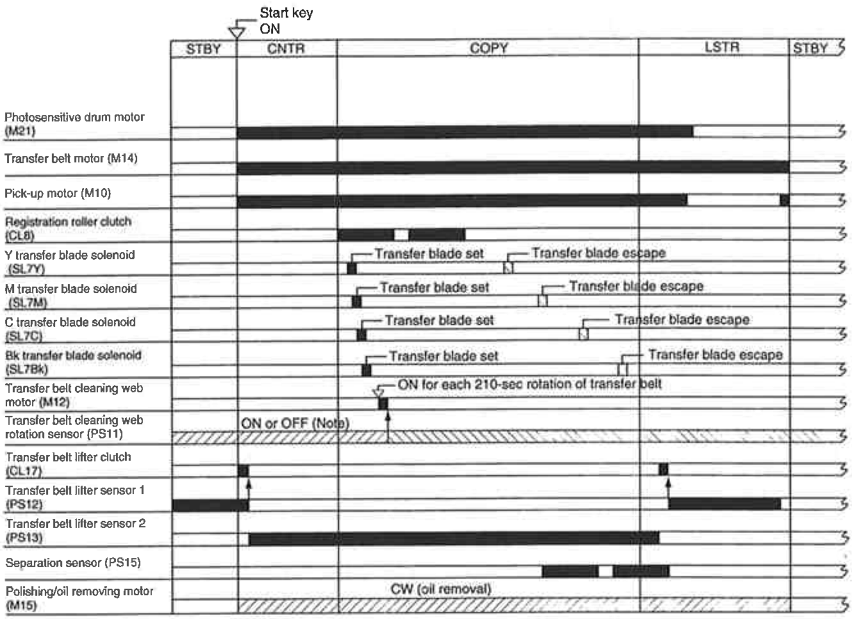
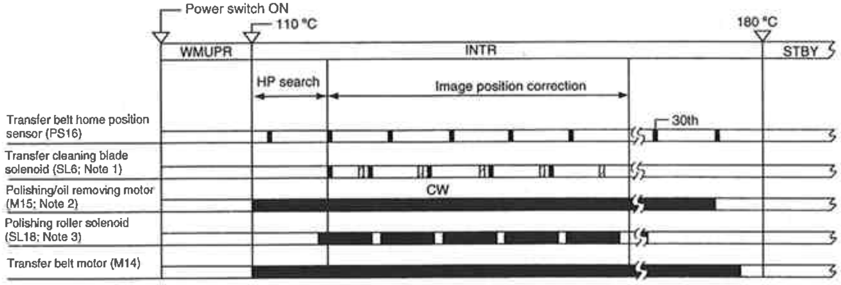

Start key ON
STBY
CNTR
COPY
LSTR
STBY
Photosensitive drum motor (M21)
Transfer belt motor (M14)
Pick-up motor (M10)
Registration roller clutch (CL8)
Y transfer blade solenoid (SL7Y)
Transfer blade set
Transfer blade escape
M transfer blade solenoid (SL7M)
Transfer blade set
Transfer blade escape
C transfer blade solenoid (SL7C)
Transfer blade set
Transfer blade escape
Bk transfer blade solenoid (SL7Bk)
Transfer blade set
Transfer blade escape
Transfer belt cleaning web motor (M12)
ON for each 210-sec rotation of transfer belt
Transfer belt cleaning web rotation sensor (PS11)
ON or OFF (Note)
Transfer belt lifter clutch (CL17)
Transfer belt lifter sensor 1 (PS12)
Transfer belt lifter sensor 2 (PS13)
Separation sensor (PS15)
Polishing/oil removing motor (M15)
CW (oil removal)

Figure 3-644A


Power switch ON
110 °C
180 °C
WMUPR
INTR
STBY
HP search
Image position correction
Transfer belt home position sensor (PS16)
30th
Transfer cleaning blade solenoid (SL6; Note 1)
Polishing/oil removing motor (M15; Note 2)
CW
Polishing roller solenoid (SL18; Note 3)
Transfer belt motor (M14)

Note1 : Transfer Cleaning Solenoid ▨ : blade pressed ON
■ : blade released

Note2 : Turns in forward direction at the first time the power switch is turned ON after every 5000 sheets of copying.

Note3 : Comes OFF each time the seam of the transfer belt passes through the grinding motor.

Figure 3-644B

F. Pre-Fixing Feeding

The pre-fixing feeding assembly moves paper which has been separated by the separation charging assembly to the fixing assembly.

The drive roller in the pre-fixing feeding assembly uses the drive of the pre-fixing feeding motor (M11) to rotate two feeding belts to move paper. To improve paper movement, the pre-fixing feeding fan (FM7) is used to keep copy stable on the belt from behind the feeding belt.

The feeding speed is switched over six steps to suit the fixing speed, thereby ensuring proper fixing when making two-sided copies or when copying on transparencies. (For feeding speed, see chapter 3. G. Fixing/Delivery Assembly, 7-a. "Controlling the Feeding Speed.")

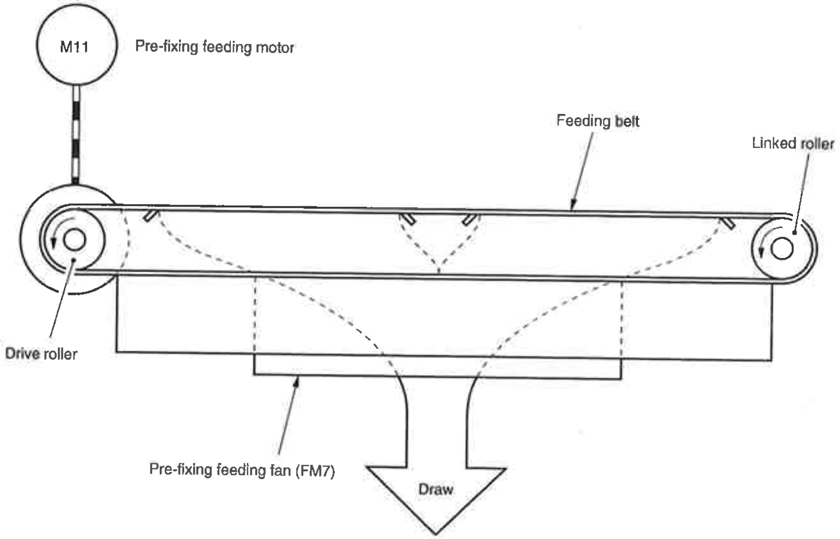

M11
Pre-fixing feeding motor
Feeding belt
Linked roller
Drive roller
Pre-fixing feeding fan (FM7)
Draw

Figure 3-645

G. Fixing/Delivery Assembly

1. Outline

The following loads are driven by the fixing motor (M9).

- Upper fixing roller
- Lower fixing roller
- Delivery roller
- Oil applying roller
- Upper fixing web (locking)

To ensure proper fixing when making two-sided copies or copying on transparencies or to suit various copying modes, the CLC1000 controls the fixing speed over six settings.

The upper roller and the lower roller are each equipped with a fixing cleaning web. The upper fixing web is driven by the upper fixing web take-up solenoid (SL3), and the lower web is driven by the lower fixing web motor (M30).

In addition, the lower fixing roller is equipped with a spring locking type cleaning blade. The separation claw used to prevent wrapping of paper round the lower fixing roller is operated to move away from the lower fixing roller by the drive of the separation claw solenoid (SL15) to prevent damage to the lower fixing roller.

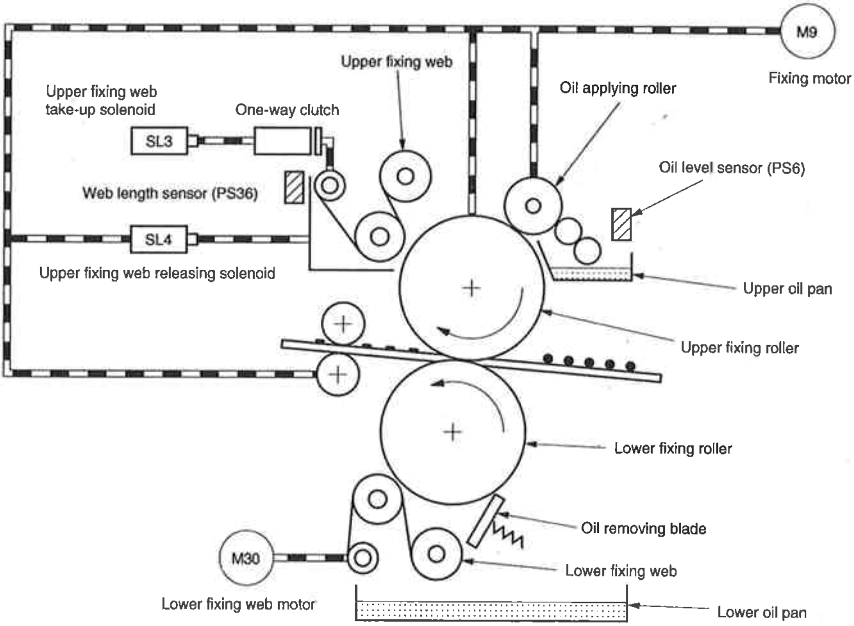

Upper fixing web
Upper fixing web take-up solenoid
One-way clutch
SL3
Web length sensor (PS36)
SL4
Upper fixing web releasing solenoid
Oil applying roller
M9
Fixing motor
Oil level sensor (PS6)
Upper oil pan
Upper fixing roller
Lower fixing roller
Oil removing blade
M30
Lower fixing web motor
Lower fixing web
Lower oil pan

Figure 3-646

2. Controlling the Fixing Roller Temperature

The upper fixing roller and the lower fixing roller are each heated by a fixing heater (H1: 700W, H2: 500W). The surface temperature of the upper fixing roller is monitored by the thermistor THM1, and the surface temperature of the lower roller is monitored by the thermistor THM2.

If the surface temperature of the fixing roller is too high,

→ The resistance of the thermistor decreases.

→ The voltage of the fixing roller surface temperature detection signal (THM1, THM2) lowers.

Based on the voltage value, the CPU on the DC controller PCB uses the upper fixing heater drive signal (UHON) and the lower fixing heater drive signal (LHON) to control the fixing heaters so that the surface temperatures of the upper roller and the lower roller will be specific values.

- Upper/lower fixing roller (common)

Copying	controlled to 180°C
During STBY	controlled to 180°C
During pre-heat	controlled to 180°C

REF.

> When the fixing lever is shifted to draw out the fixing assembly, the fixing lever switch (SW5) cuts off power to the fixing heater.

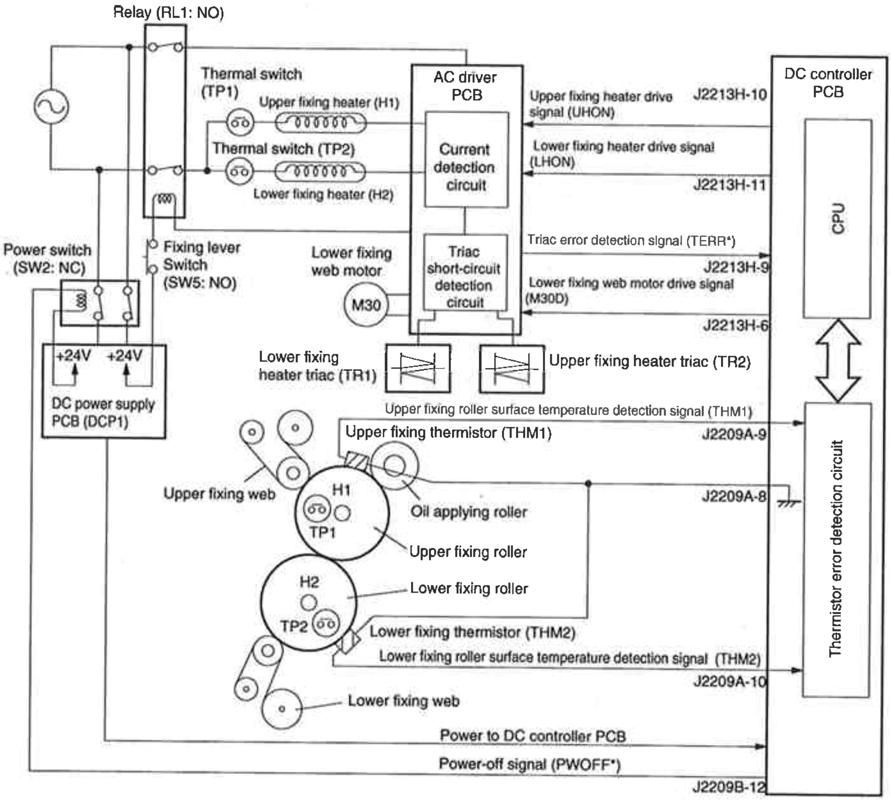

Relay (RL1: NO)
Thermal switch (TP1)
Upper fixing heater (H1)
Thermal switch (TP2)
Lower fixing heater (H2)
AC driver PCB
Current detection circuit
Triac short-circuit detection circuit
DC controller PCB
CPU
Thermistor error detection circuit
Upper fixing heater drive signal (UHON)
J2213H-10
Lower fixing heater drive signal (LHON)
J2213H-11
Triac error detection signal (TERR*)
J2213H-9
Lower fixing web motor drive signal (M30D)
J2213H-6
Power switch (SW2: NC)
Fixing lever Switch (SW5: NO)
Lower fixing web motor
M30
+24V
+24V
DC power supply PCB (DCP1)
Lower fixing heater triac (TR1)
Upper fixing heater triac (TR2)
Upper fixing roller surface temperature detection signal (THM1)
Upper fixing thermistor (THM1)
J2209A-9
J2209A-8
Upper fixing web
H1
TP1
Oil applying roller
Upper fixing roller
H2
Lower fixing roller
TP2
Lower fixing thermistor (THM2)
Lower fixing roller surface temperature detection signal (THM2)
J2209A-10
Lower fixing web
Power to DC controller PCB
Power-off signal (PWOFF*)
J2209B-12

Figure 3-647

3. Protection Mechanisms

The CLC1000 is equipped with four types of protection mechanisms used to prevent malfunction of the fixing heater.

- The CPU monitors the voltage of the thermistors THM1 and THM2 and indicates 'E000' upon detection of an error.

- The triac short-circuit detection circuit on the AC driver PCB monitors the drive of the fixing heater; if the fixing heater is on when it should be off, it causes the power OFF signal (PWOFF*) to go '0' so as to cut power to the fixing heater.

- The thermistor error detection circuit on the DC controller PCB checks the thermistor for a short circuit (230°C equivalent); if it detects a short-circuit, or if the thermistor doe not register about 50°C or more two to three minutes after the fixing heater has turned on, it sends the power switch OFF signal (PWOFF*) to turn off the power switch (SW2).

- If the internal temperature of the thermal switch of the upper fixing roller exceeds 230°C or the internal temperature of the thermal switch of the lower fixing roller exceeds 230°C, the respective switch turns off to cut off power to the fixing heater.

⚠ Once the contact of the thermal switch (TP1, TP2) opens, the thermal switch cannot be used again unless cooled to 0°C or less. (The contact will not return to normal even after returning to normal temperature.)

⚠ To reset 'E000',

1) Remove the cause.
2) Start service mode, and select 'FUSER > FUNCTION'.
3) Press 'E000-RLS'. (The notation <P> will change from 'ERROR' to 'BUSY' and to 'ERROR'.)
4) Turn off and then on the power switch.

3. Driving the Fixing Cleaning Web

a. Upper Fixing Web

The upper fixing web used to clean the upper fixing roller is taken up by 0.45 mm when the upper fixing web take-up solenoid (SL3) turns on and off.

The upper fixing web take-up solenoid turns on once for each eight sheets of paper.

The edge of the web is given a cut for identification of its remaining length.

When the web is taken up to the cut, the arm, which has been supported by the web, falls through the cut to be detected by the web length sensor (S36).

An alert message will be indicated on the control panel when the sensor detects the sensor arm.

The upper web moves away from the upper fixing roller when the upper fixing web releasing solenoid (SL4) tuns on.

b. Lower Fixing Web

The lower fixing web is used to clean the lower fixing roller by the drive of the lower fixing web motor (M30).

The lower fixing web motor takes up the lower fixing web by 0.05 mm for each sheet of paper.

The dirt that remained after cleaning by the web is scraped by the lower fixing blade of a spring pressure type.

The lower fixing web is not equipped with a mechanism that can detect its remaining length.

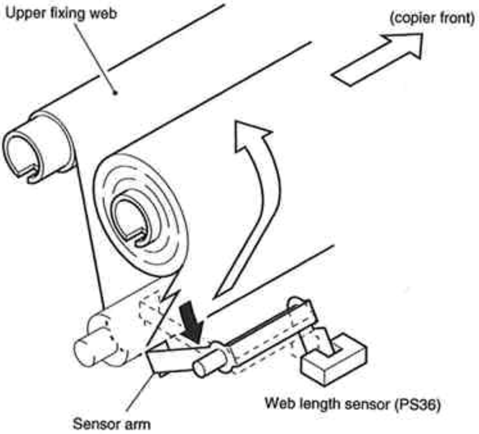


Figure 3-648

⚠

1. 'E005' will be indicated when the upper fixing web take-up solenoid turns on and off about 270 times after the message NO WEB is indicated on the control panel.
2. The web is 5 m long, and the cut is found at a point 4.7m from its leading edge.
3. When you have replaced the upper fixing web, be sure to execute 'E005-RLS' under 'FUSER' of 'FUNC' in service mode, and turn off and then on the power switch.

4. Applying Fixing Oil

The CLC1000 uses a circulating type mechanism to apply oil.

The oil applying roller remains in contact with the upper fixing roller at all times, preventing offset by supplying fixing oil to the roller.

The silicone oil inside the oil tank is drawn to the upper oil pan by the work of the oil pump solenoid (SL2).

Such impurities as paper lint in the oil circulating in the fixing assembly is remove by the felt of the oil applying roller and the filter inside the oil pump solenoid.

5. Detecting the Level of Fixing Oil

The level of silicone oil inside the upper oil pan is monitored by the oil level sensor (PS6). The float floating on the silicone oil moves up and down according to the level of the oil, enabling the oil level sensor to detect the level in reference to the moving arm.

If the oil level sensor does not detect the arm at power-on, the oil pump solenoid repeats turning on and off until the arm is detected. If the arm is still not detected after operating the oil pump solenoid for 10 min, the 'Add Oil' message will be indicated on the control panel.

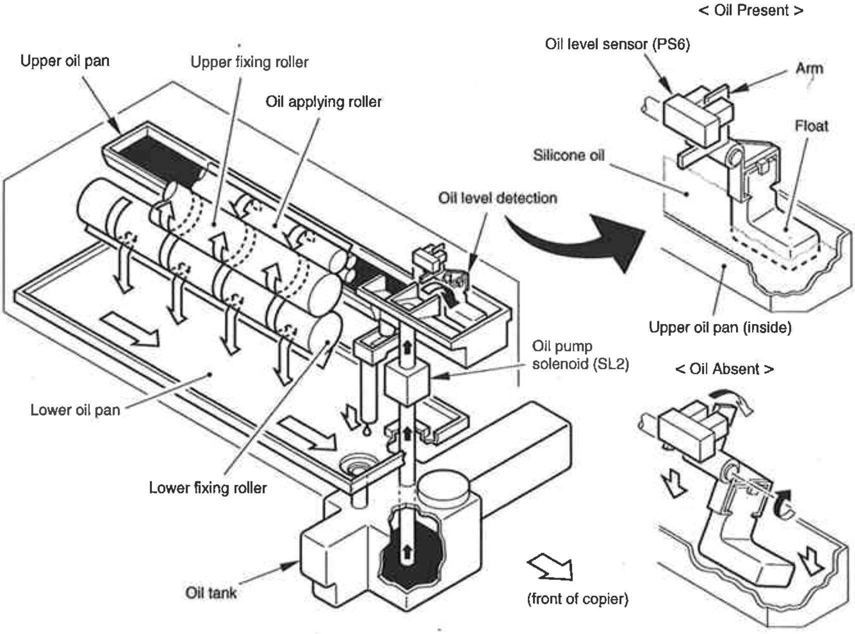

< Oil Present >
Oil level sensor (PS6)
Arm
Float
Silicone oil
Upper oil pan
Upper fixing roller
Oil applying roller
Oil level detection
Upper oil pan (inside)
< Oil Absent >
Oil pump
solenoid (SL2)
Lower oil pan
Lower fixing roller
Oil tank
(front of copier)

Figure 3-649

6. Reciprocating Mechanism of the Thermistor

To prevent damage to the upper fixing roller by the thermistor (THM1), the thermistor is moved back and forth along the axis of the upper fixing roller over a distance of 12 mm.

The thermistor is moved back and forth by transmitting the drive from the upper fixing web take-up solenoid (SL3) through a one-way arm to the reciprocating cam.

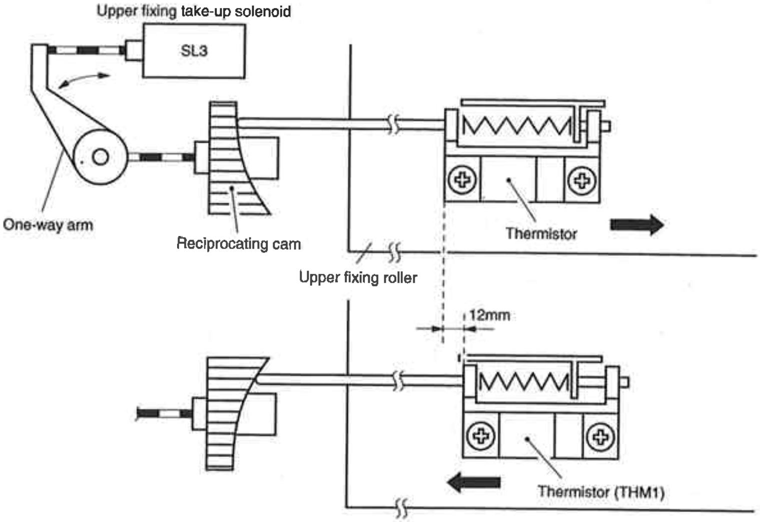

Upper fixing take-up solenoid
SL3
One-way arm
Reciprocating cam
Thermistor
Upper fixing roller
12mm
Thermistor (THM1)

Figure 3-650

7. Controlling the Fixing Speed

a. Fixing Speed

The CLC1000 controls the fixing speed to any of the six settings as shown in Table 3-611 to ensure proper fixing independent of different copying modes.

In addition, the CLC1000 is capable of varying the fixing speed to produce a degree of shine on copies to suit the preferences of the user.

A higher fixing speed decreases the shine on copies, providing a matt effect; on the other hand, a lower fixing speed increases the shine on copies, providing a glossy effect.

Source of paper	One-sided/ two-sided	Type of paper	Continuous/ single copying	Shine	Fixing speed (mm/sec)
Cassette/paper deck	One-sided	Thin paper (64 to 79 g/m^2) Plain paper (80 to 105 g/m^2)	Single copying	Matte	160
				Standard	145
				Glossy	90
			Continuous copying	Matte	160
				Standard	140
				Glossy	90
		Transparency	Continuous/ single copying	Standard	70
Duplexing unit	Two-sided (2nd side)	Plain paper (105 g)	Continuous/ single copying	Standard	140
				Glossy	90
Multifeeder	One-sided/ two-sided (2nd side)	Thin paper (64 to 79 g/m^2) Plain paper (80 to 105 g/m^2)	Continuous/ single copying	Standard	140
				Glossy	90
		Thick paper (106 to 157 g)	Continuous/ single copying	Standard	90
				Glossy	70
		Thick paper (158 to 209 g)	Continuous/ single copying	Standard	70
				Glossy	45
		Transparency	Continuous/ single copying	Standard	70

Table 3-611

b. Controlling the Fixing Motor

The fixing motor is controlled to six different speeds by PLL control.

Figure 3-651 is a block diagram of the fixing motor controller circuit, which has the following functions:

- Turns on and off the fixing motor.
- Switches the speed of the fixing motor.
- Executes constant speed control on the fixing motor.

The fixing motor is turned on and off by the fixing motor fixing signal (M9D*).

The speed of the fixing motor is switched by the standard pulse signal (M9PLS), and the speed is kept at a specific value by comparing the feedback clock signal (M9CLK) from the fixing motor against the reference pulse signal.

To switch the speed of the fixing motor (fixing speed), the frequency of the reference pulse signal is varied.

The DC controller PCB indicates 'E014' on the control panel if an error is found in the fixing motor as identified by the following signals:

- The speed of rotation of the fixing motor deviates from the specified value, and the PLL lock signal (M9PLL*) goes '1'.
- The current of the fixing motor is checked as the fixing motor current detection signal (M9CD); it exceeds the specified value (overcurrent; M9CD is an analog signal).

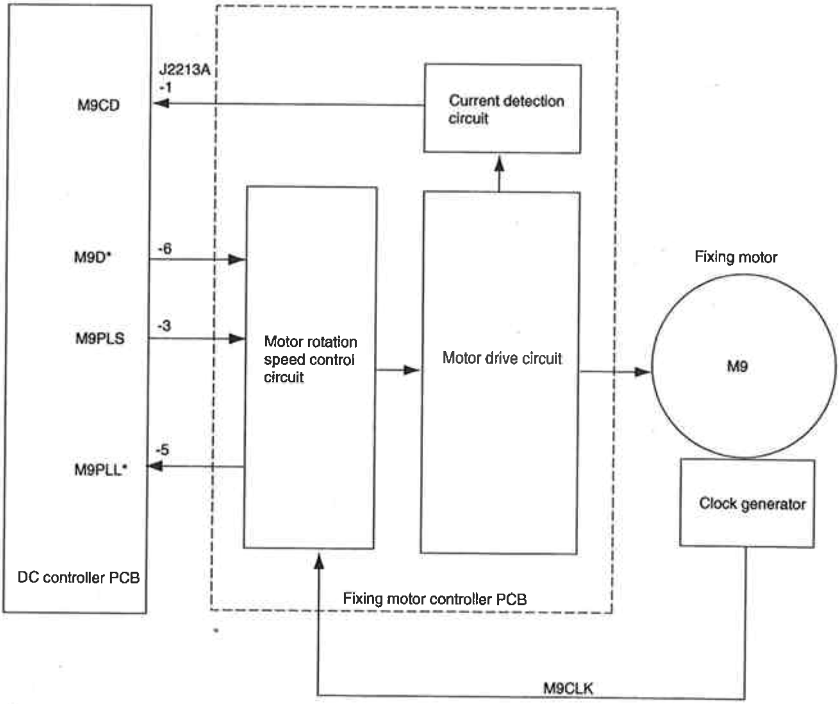

J2213A
-1
M9CD
Current detection circuit
-6
M9D*
-3
M9PLS
Motor rotation speed control circuit
Motor drive circuit
Fixing motor
M9
-5
M9PLL*
Clock generator
DC controller PCB
Fixing motor controller PCB
M9CLK

Figure 3-651

8. De-Curling Roller

In general, toners of four different colors are fused to the fibers of paper to produce a color copy, and wrapping the paper around the drum tends to curl the paper, possibly leading to jamming if left as is during feeding or when picking up for the second side in two-sided copying mode.

The de-curling roller found between the fixing roller and the delivery roller is used to remove curling, thereby limiting pick-up/feeding faults in two-sided copying.

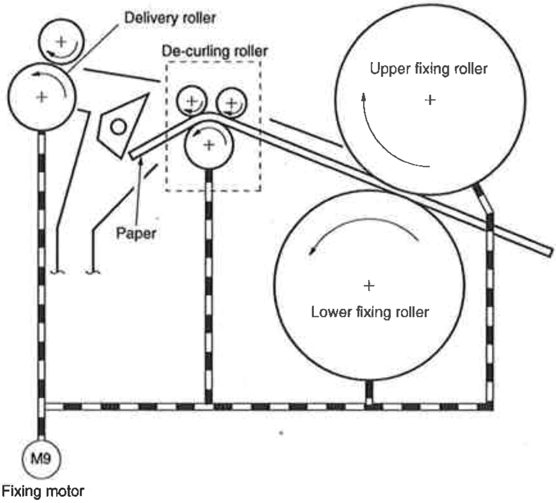

Delivery roller
De-curling roller
Upper fixing roller
Paper
Lower fixing roller
M9
Fixing motor

Figure 3-652

9. Retracting the Separation Claw

The CLC1000 moves the separation claw away from the lower fixing roller by the drive of the separation claw solenoid (SL15) during initial rotation and last rotation to limit damage to the lower fixing roller.

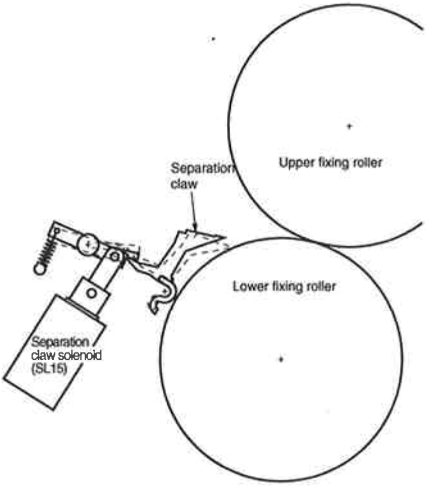
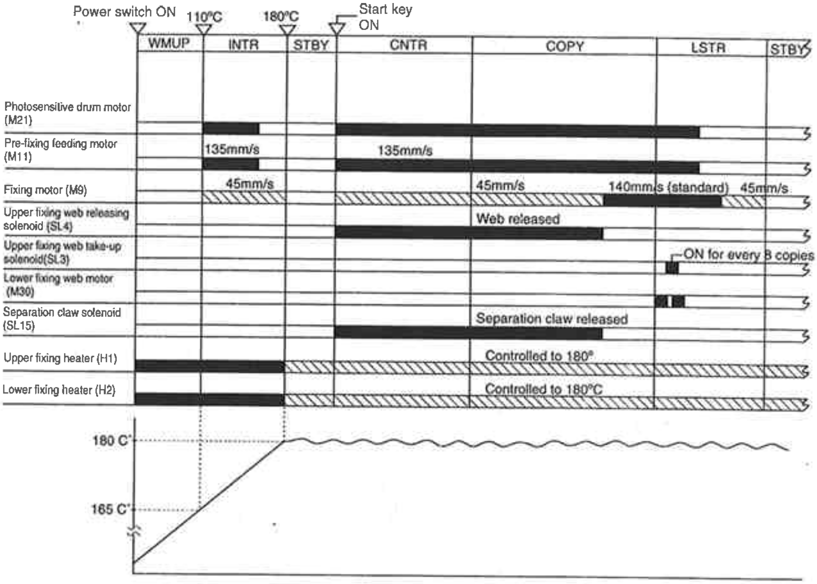

Separation claw
Upper fixing roller
Lower fixing roller
Separation claw solenoid (SL15)

Figure 3-653

10. Sequence of Operations (fixing/delivery assembly)

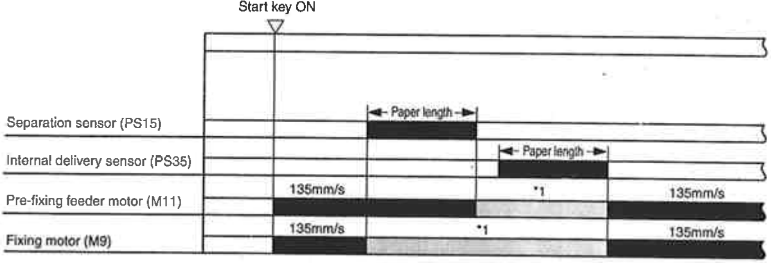
a. Sequence of Basic Operations


Power switch ON
110°C
180°C
Start key ON
WMUP
INTR
STBY
CNTR
COPY
LSTR
STBY
Photosensitive drum motor (M21)
Pre-fixing feeding motor (M11)
135mm/s
135mm/s
Fixing motor (M9)
45mm/s
45mm/s
140mm/s (standard)
45mm/s
Upper fixing web releasing solenoid (SL4)
Web released
Upper fixing web take-up solenoid(SL3)
ON for every 8 copies
Lower fixing web motor (M30)
Separation claw solenoid (SL15)
Separation claw released
Upper fixing heater (H1)
Controlled to 180°
Lower fixing heater (H2)
Controlled to 180°C
180 C°
165 C°

- A4/LTR, 2 Copies, 4-Color, Direct, Cassette 1, Plain Paper

Figure 3-654

b. Varying Fixing Speed


Start key ON
Separation sensor (PS15)
Paper length
Internal delivery sensor (PS35)
Paper length
Pre-fixing feeder motor (M11)
135mm/s
*1
135mm/s
Fixing motor (M9)
135mm/s
*1
135mm/s

*1: For feeding speed, see 'Fixing Speed' under 'Controlling the Fixing Speed.'

Figure 3-655

The feeding speed of the pre-fixing feeding belt is changed as soon as paper has left the separation sensor (PS15) and reaches the pre-fixing feeding belt. Thereafter, the speed returns to its initial speed when the paper has left the internal delivery sensor (PS35).

The speed of the fixing roller, on the other hand, is changed as soon as the leading edge of paper reaches the separation sensor (PS15); it returns to its initial speed as soon as the paper has left the internal delivery sensor (PS35).

H. Detecting Jams

The CLC1000 is equipped with the following sensors to check the presence/absence of paper and, if any, if it is moved properly.

- Pick-up vertical path 1 sensor (PS21)
- Pick-up vertical path 2 sensor (PS25)
- Pick-up vertical path 3 sensor (PS26)
- Registration paper sensor (PS1)
- Post-registration paper sensor (PS14)
- Separation sensor (PS15)
- Internal delivery sensor (PS35)
- Delivery sensor (PS34)
- Delivery vertical path 1 sensor (PS38)
- Delivery vertical path 2 sensor (PS32)
- Duplexing reversal sensor (PS33)
- Pre-holding tray paper sensor 1 (PS8)
- Pre-holding tray paper sensor 2 (PS9)
- Holding tray paper sensor 1 (PS30)
- Holding tray paper sensor 2 (PS31)

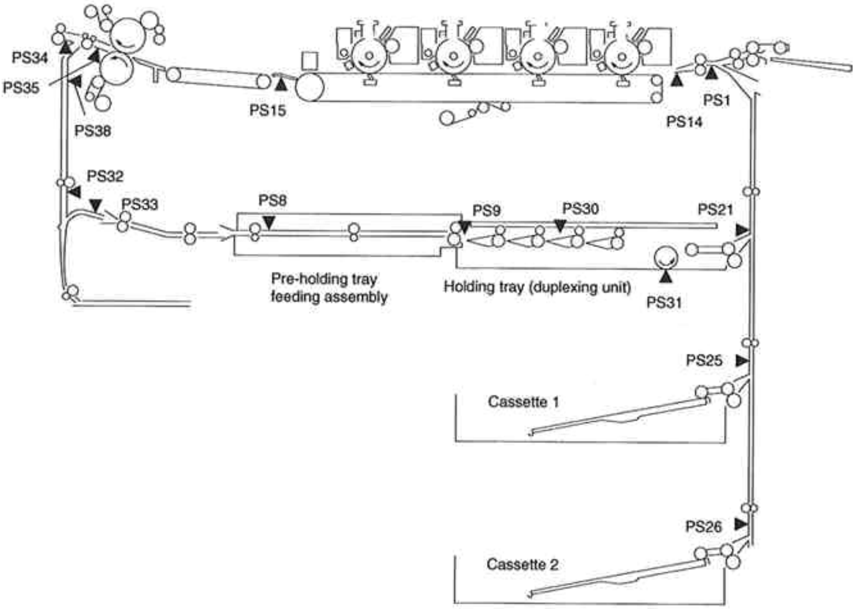

PS34
PS35
PS38
PS15
PS1
PS14
PS32
PS33
PS8
PS9
PS30
PS21
Pre-holding tray feeding assembly
Holding tray (duplexing unit)
PS31
PS25
Cassette 1
PS26
Cassette 2

Figure 3-656

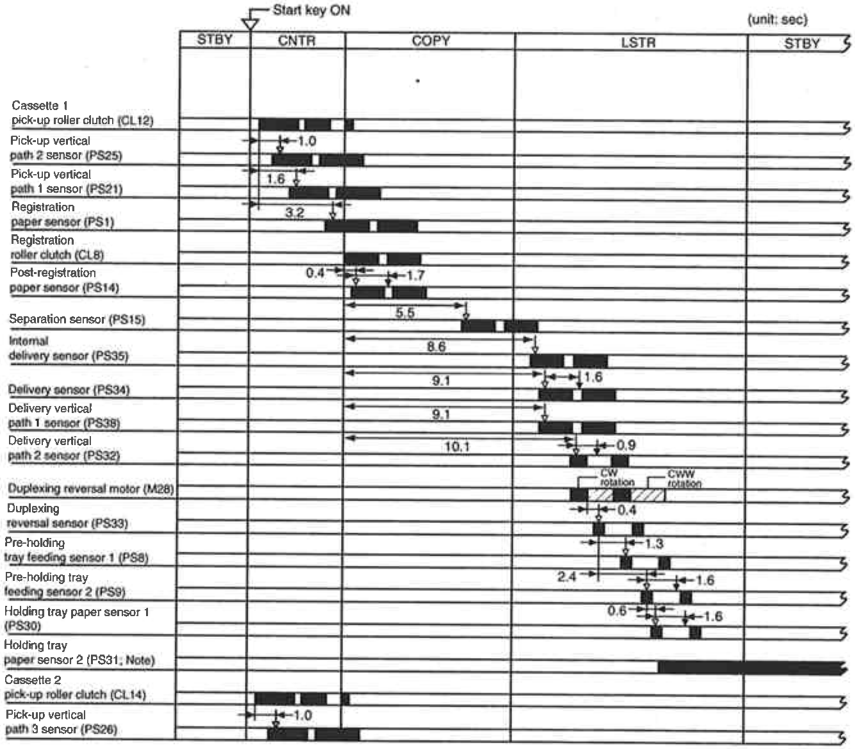
The presence/absence of paper or a jam is checked in reference to the presence/absence of paper at a specific sensor at such times as programmed in the CPU in advance.

The CLC1000 remembers the ‘number of copies remaining at time of jamming’ and ‘copying mode’ so that the user need not reset these settings after opening the front cover for jam removal.

The CLC1000 will assume the presence of a jam if any one of the sensors is on when the power is turned on.

If paper is left behind where there is no paper sensor (on the transfer belt for example), a jam is identified when the paper turns on a sensor while being moved by the drive of warm-up operation.

If a jam occurs during continuous copying, copies on the delivery side with reference to the jam will be processed normally provided that the feeding system for such copies is independent of the feeding system used by the jammed paper.



▽ : Delay jam check (normal if paper found)

▼ : Stationary jam (normal, if paper not found)

Note: The message 'JAM' appears on the control panel if the holding tray paper sensor 2 (PS31) detects paper at such times as not programmed.

- A4/LTR, 2 Copies, 4-Color, Direct, Cassette

Figure 3-657

VII. CONTROL PANEL

A. Outline

The CLC1000 consists of a control panel relay PCB, a liquid crystal display panel capable of displaying 200 x 640 dots of information, tenkey PCB, and a sub key PCB (including a pilot lamp); the control panel has the following functions:

1 Data communication
2 LCD processing
3 LCD contrast adjustment
4 Touch switch input

B. Operation

1. Data Communication

Data communications are controlled by the CPU on the reader controller PCB.

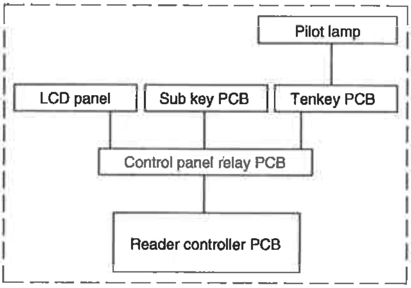

Pilot lamp
LCD panel
Sub key PCB
Tenkey PCB
Control panel relay PCB
Reader controller PCB

Figure 3-701

2. LCD Display Processing

The CPU on the reader controller PCB sends commands to the LCD controller at such times as programmed in advance. The LCD controller, on the other hand, interprets and executes these commands. The LCD controller performs ON/OFF control over the display as programmed.

The LCD controller writes display character codes in the RAM for display memory in sequence; the RAM data is then displayed on the display panel in response to the timing signal generated by the LCD controller.

3. Adjusting the LCD Contrast

VR5301 is mounted on the control panel relay PCB and may be used to adjust the contrast of the LCD panel.

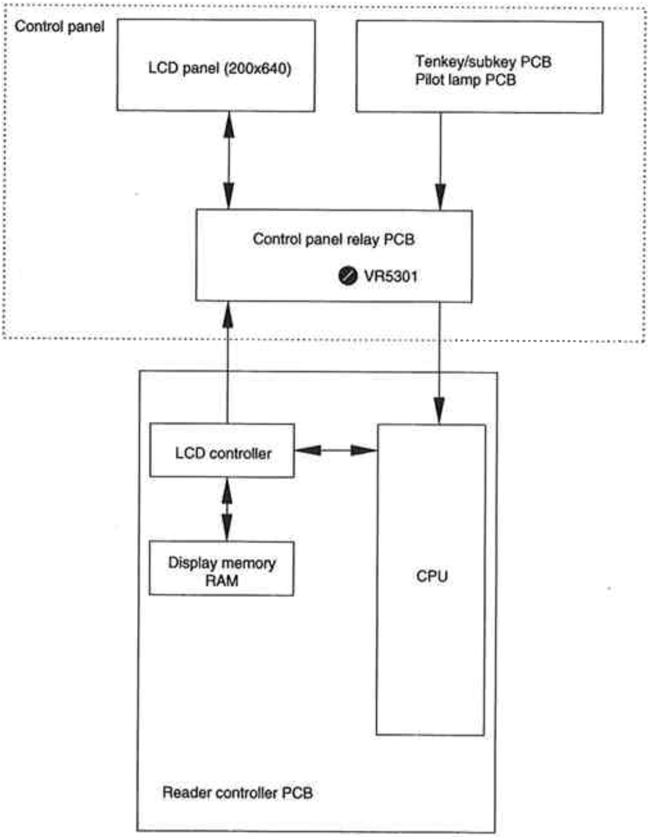

Control panel
LCD panel (200x640)
Tenkey/subkey PCB
Pilot lamp PCB
Control panel relay PCB
VR5301
LCD controller
Display memory RAM
CPU
Reader controller PCB

Figure 3-702

4. Touch Switch

The keys on the touch switch panel and the control panel controller PCB are connected as shown in Figure 3-703. The touch switch panel consists of two sheets of glass coated with transparent conducting membranes and joined with spacers in between; it has a matrix of 12 rows and 20 columns of keys.

When the surface of the top plate is pressed by a finger, the two plates of glass come into contact to allow electrical continuity.

A pair of electrodes are connected and, as in the case of a conventional matrix, X/Y coordinates may be identified. In other words, the correspondence between a key scan signal from the control panel controller circuit and an input signal to the control panel controller PCB allows the control panel controller PCB to recognize which key has been pressed.

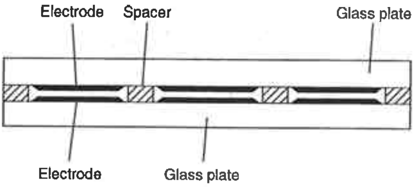


Figure 3-703

VIII. EDITOR

A. Outline

The CLC1000's editor is a static type editor consisting of two tablets, one each for reading points in the horizontal (X) direction and points in the vertical (Y) direction, and a pen switch.

The controller PCB recognizes the area indicated by the pen switch on the editor.

The CLC1000's tablet has electrode wires arranged at intervals of 6 mm; the static bond between the electrode wire and the pen switch represent each specific point pressed by the pen.

B. Operation

When the pen switch presses the top tablet, the CPU on the control PCB applies pulses to the electrode wires through both decoder of tablets as in 1, 2, ... n-1, n, n+1, and so forth.

The contact between a pulse and the pen switch results in a static bond, and the level of voltage is read into the controller PCB through the pen switch. (Figure 3-801)

The voltage is then converted by the A/D converter circuit on the controller PCB into digital signals and then further into a signal representing a spatial area in mm through computation by the CPU for communication to the copier.

REF.

Since the editor identifies the point of input with reference to static bonding, a thick original (4 mm or less) may be placed on it.
On the other hand, it cannot accommodate originals made of conducting material, pressure sensitive material, or carbon-backed paper.

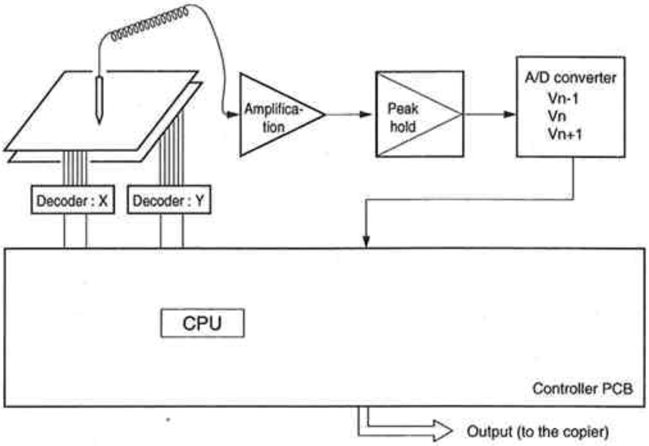

Amplifica-tion
Peak hold
A/D converter
Vn-1
Vn
Vn+1
Decoder : X
Decoder : Y
CPU
Controller PCB
Output (to the copier)

Figure 3-801

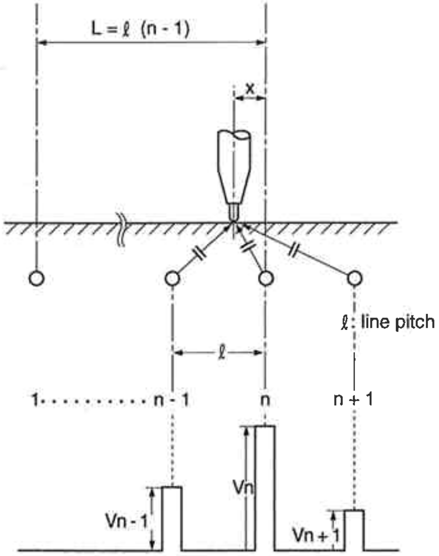

L = ℓ (n - 1)
x
ℓ: line pitch
ℓ
1 . . . . n - 1
n
n + 1
Vn - 1
Vn
Vn + 1

Figure 3-802

Reference:

To identify the point of input,

Pulses are applied to electrode wires in a specific sequence (1, ..., n-1, n, n+1).

⇩

Maximum value Vn occurs at the nth electrode wire.
L: L (n-1)
L: wire interval

⇩

Vn- (Vn-1)
Vn- (Vn+1)
= S is obtained, and x is computed from the data table through reverse operation.

⇩

L ± x mm is obtained.
When . . . n, n+1,
When . . . n, n-1,

C. Zero-Level Adjustment for Input Coordinates

If you have replaced the control PCB or the tablet of the editor, you must set the DIP switch on the controller PCB as indicated on the label attached to the cable of the tablet (Figures 3-803 and -804).

After setting the DIP switch, make adjustments under 'EDADJ-X, Y' in service mode if discrepancy is found in input coordinates.

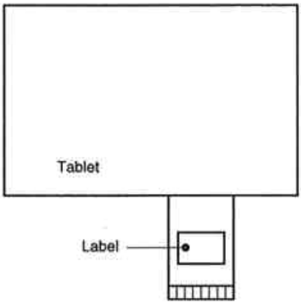
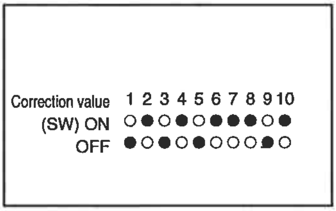


Figure 3-803



Correction value	1	2	3	4	5	6	7	8	9	10
(SW) ON	○	●	○	●	○	●	●	●	○	●
OFF	●	○	●	○	●	○	○	○	●	○

Example (●: setting value)

Figure 3-804 Display Sample

IX. FANS

The CLC1000 is equipped with fans to exhaust ozone, draw stray toner, and cool parts.

Figure 3-901 shows the locations of the fans. Table 3-901 shows the function of each fan and the filter used as well as the orientation of the fan. Figures 3-901 through -904 show when each of these fans is tuned on.

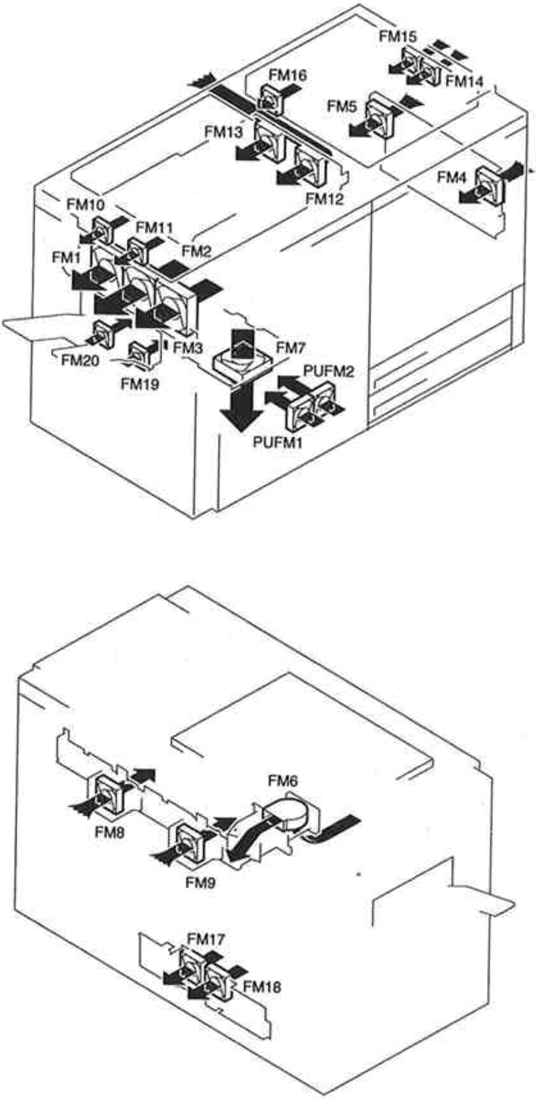

FM15
FM16
FM14
FM5
FM13
FM4
FM12
FM10
FM11
FM2
FM1
FM3
FM7
FM20
FM19
PUFM2
PUFM1
FM6
FM8
FM9
FM17
FM18

Figure 3-901

Notation	Name	Filter	Function
FM 1	Delivery assembly cooling fan 1	Dust-proofing filter Ozone filter	Discharges heated air from around the delivery assembly.
FM 2	Delivery assembly cooling fan 2		
FM 3	Delivery assembly cooling fan 3		
FM 4	Laser cooling fan (front)	Dust-proofing filter	Prevents overheating of the laser unit.
FM 5	Laser cooling fan (rear)		
FM 6	Primary exhaust fan	Dust-proofing filter Ozone filter Toner filter	Removes ozone and stray toner.
FM 7	Pre-fixing feeding fan	None	Draws paper.
FM 8	Primary suction fan (left)	Dust-proofing fan	Circulates air inside the machine.
FM 9	Primary suction fan (right)		
FM 10	Scanner assembly cooling fan 1	None	Prevents overheating of the CCD and copyboard glass by the scanning lamp.
FM 11	Scanner assembly cooling fan 2		
FM 12	Scanner assembly cooling fan 3		
FM 13	Scanner assembly cooling fan 4		
FM 14	Digital unit cooling fan 1	Dust-proofing filter	Cools the digital unit.
FM 15	Digital unit cooing fan 2		
FM 16	Digital unit cooling fan 3	None	
FM 17	Power supply cooling fan 1	Dust-proofing filter Ozone filter	Discharges heated air from around the power supply unit.
FM 18	Power supply cooling fan 2		
FM 19	Lower delivery cooling fan 1	Dust-proofing filter	Cools paper after fixing.
FM 20	Lower delivery cooling fan 2		
PUFM 1	Power supply cooling fan 3	Dust-proofing filter Ozone filter	Cools the power supply unit.
PUFM 2	Power supply cooling fan 4		

Table 3-901

- Sequence of Fan Operations

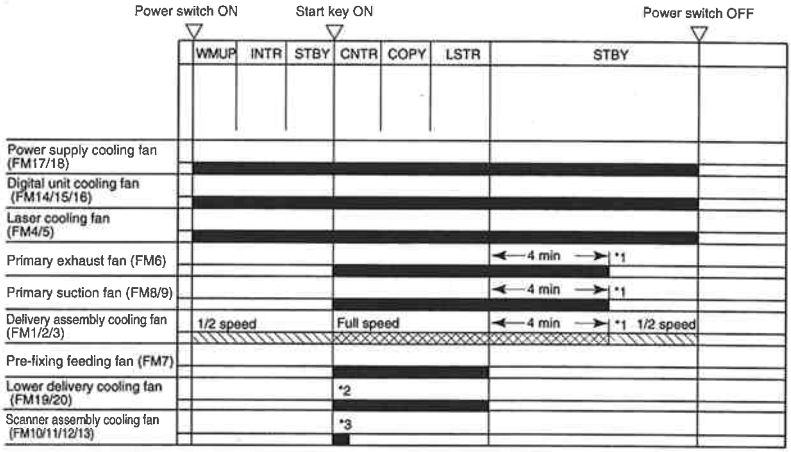


Figure 3-902

- Sequence of Fan Operations (power switch OFF within 4 min of end of copying)

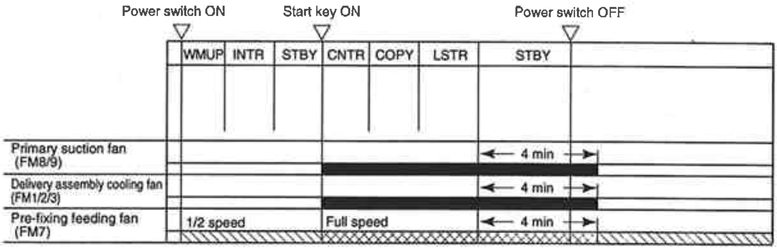


Figure 3-903

X. POWER SUPPLY

A. Power Supply

The CLC1000's DC power is sent to each load through each controller PCB from three power supply PCBs (DCP1U, DCP1L, DCP2).

The DC power supply PCB 1 supplies DC voltage in conjunction with the power switch, and the DC power supply PCB 2 supplies DC voltage operating independently of the power switch.

Figure 3-1001 shows the supply route of AC power to each power supply PCB; the voltage and the destination of the output of each power supply PCB are as shown in Figure 3-1002/3.

The CLC1000 is equipped with a power-saving switch (SW8) so that power to the cassette heater may be supplied "at all times" or "only when the main switch is on." Table 3-1001 shows heaters whose power conditions differ depending on the setting of the power-saving switch (SW8).

You may change the conditions for the activation of the cassette heater using service mode. As long as the power saving switch is on, the cassette heater turns on according to the settings even when the power switch is off.

Since the DC power to the DC controller PCB and the reader controller PCB is cut off when the power switch is turned off, these PCBs are equipped with a lithium battery for their RAMs.

Power switch (SW2)	Power-saving switch (SW8)	Holding tray heater	Cassette 1 heater Cassette 2 heater Paper Deck heater	Y drum heater M drum heater C drum heater Bk drum heater
ON	1 (ON)	ON	ON	ON
ON	0 (OFF)	ON	ON	ON
OFF	1 (ON)	OFF	ON	ON
OFF	0 (OFF)	OFF	OFF	OFF

Table 3-1001

B. Protection Mechanisms for the Power Supply Circuits

The power circuits (DCP1U, DCP1L, DCP2) are equipped with an overcurrent detection circuit, and a protection mechanism is activated upon detection of a short-circuit to cut off the output.

If such a condition occurs, turn off the switch, disconnect the power plug, remove the cause that activated the protection mechanism, and turn on the power once again. The protection circuit may be reset by keeping the AC power of DCP1 off for about 30 sec and then turning it on once again.

AC Power Supply Route to Each Power Supply Circuit

Paths not shown are as determined by the model (country of installation).

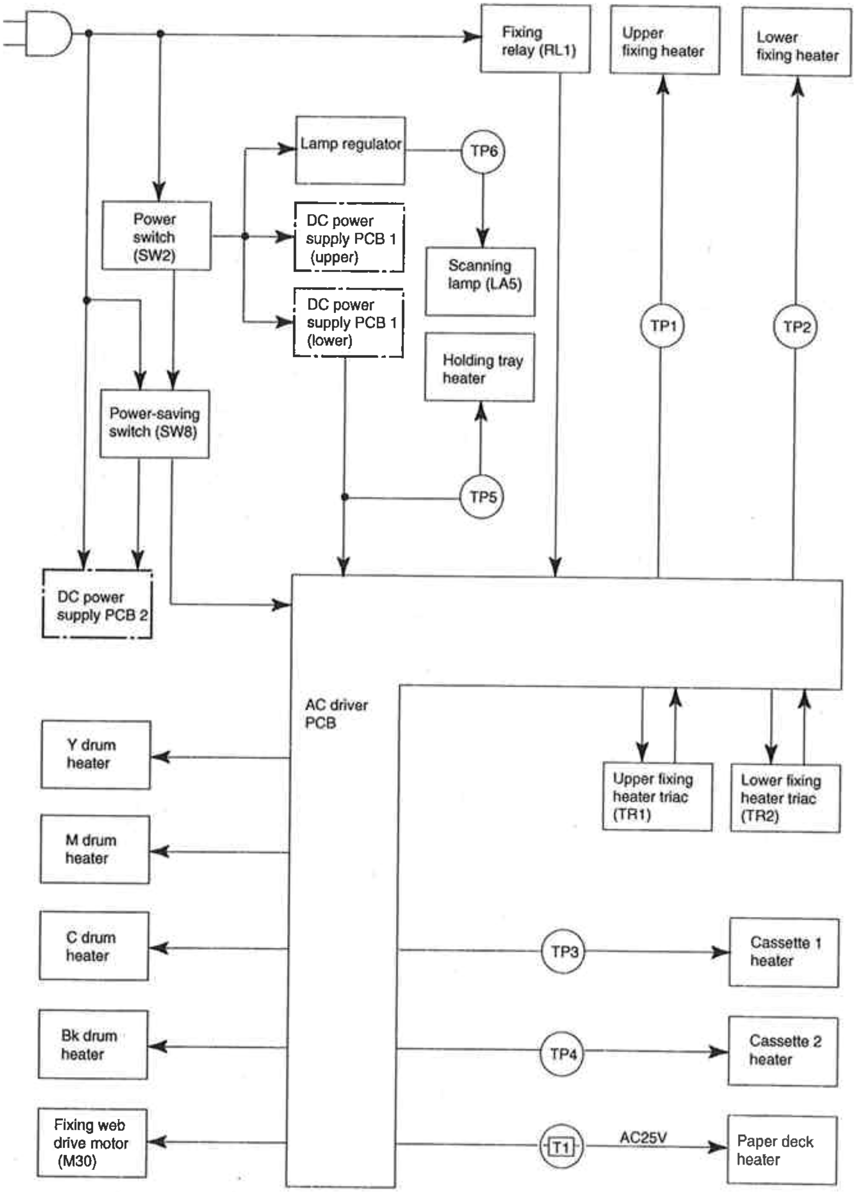

Fixing relay (RL1)
Upper fixing heater
Lower fixing heater
Lamp regulator
TP6
Power switch (SW2)
DC power supply PCB 1 (upper)
Scanning lamp (LA5)
DC power supply PCB 1 (lower)
TP1
TP2
Holding tray heater
Power-saving switch (SW8)
TP5
DC power supply PCB 2
AC driver PCB
Y drum heater
M drum heater
C drum heater
Bk drum heater
Fixing web drive motor (M30)
Upper fixing heater triac (TR1)
Lower fixing heater triac (TR2)
TP3
Cassette 1 heater
TP4
Cassette 2 heater
T1
AC25V
Paper deck heater

Figure 3-1001

Voltage and Destination of Output by Each Power Supply Circuit (1/2)

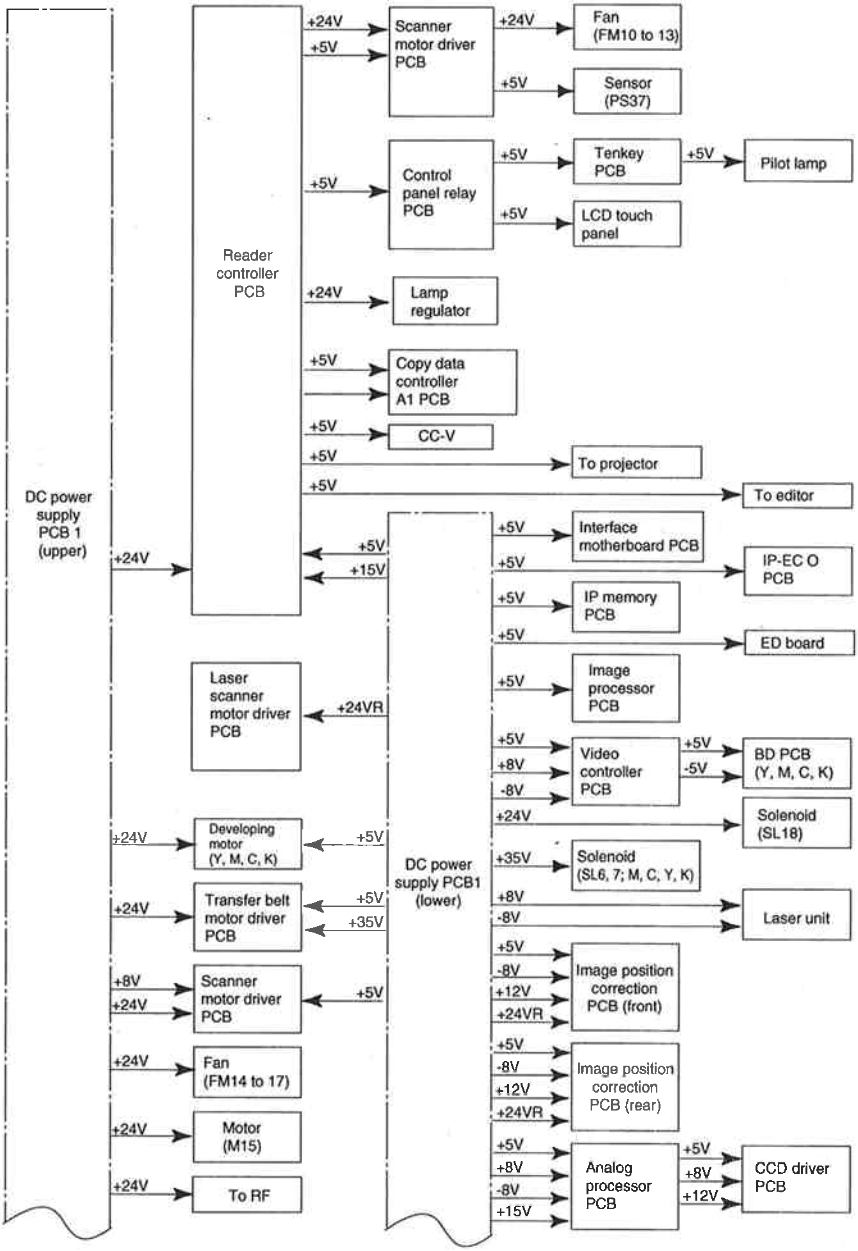

DC power supply PCB 1 (upper)
+24V
Reader controller PCB
+24V
+5V
Scanner motor driver PCB
+24V
Fan (FM10 to 13)
+5V
Sensor (PS37)
+5V
Control panel relay PCB
+5V
Tenkey PCB
+5V
Pilot lamp
+5V
LCD touch panel
+24V
Lamp regulator
+5V
Copy data controller A1 PCB
+5V
CC-V
+5V
To projector
+5V
To editor
+5V
+15V
DC power supply PCB1 (lower)
+5V
Interface motherboard PCB
+5V
IP-EC O PCB
+5V
IP memory PCB
+5V
ED board
+5V
Image processor PCB
Laser scanner motor driver PCB
+24VR
+5V
+8V
-8V
Video controller PCB
+5V
-5V
BD PCB (Y, M, C, K)
+24V
Solenoid (SL18)
+24V
Developing motor (Y, M, C, K)
+5V
+35V
Solenoid (SL6, 7; M, C, Y, K)
+24V
Transfer belt motor driver PCB
+5V
+35V
+8V
-8V
Laser unit
+5V
-8V
+12V
+24VR
Image position correction PCB (front)
+8V
+24V
Scanner motor driver PCB
+5V
+24V
Fan (FM14 to 17)
+5V
-8V
+12V
+24VR
Image position correction PCB (rear)
+24V
Motor (M15)
+5V
+8V
-8V
+15V
Analog processor PCB
+5V
+8V
+12V
CCD driver PCB
+24V
To RF

Figure 3-1002

Voltage and Destination of Output by Each Power Supply Circuit (2/2)

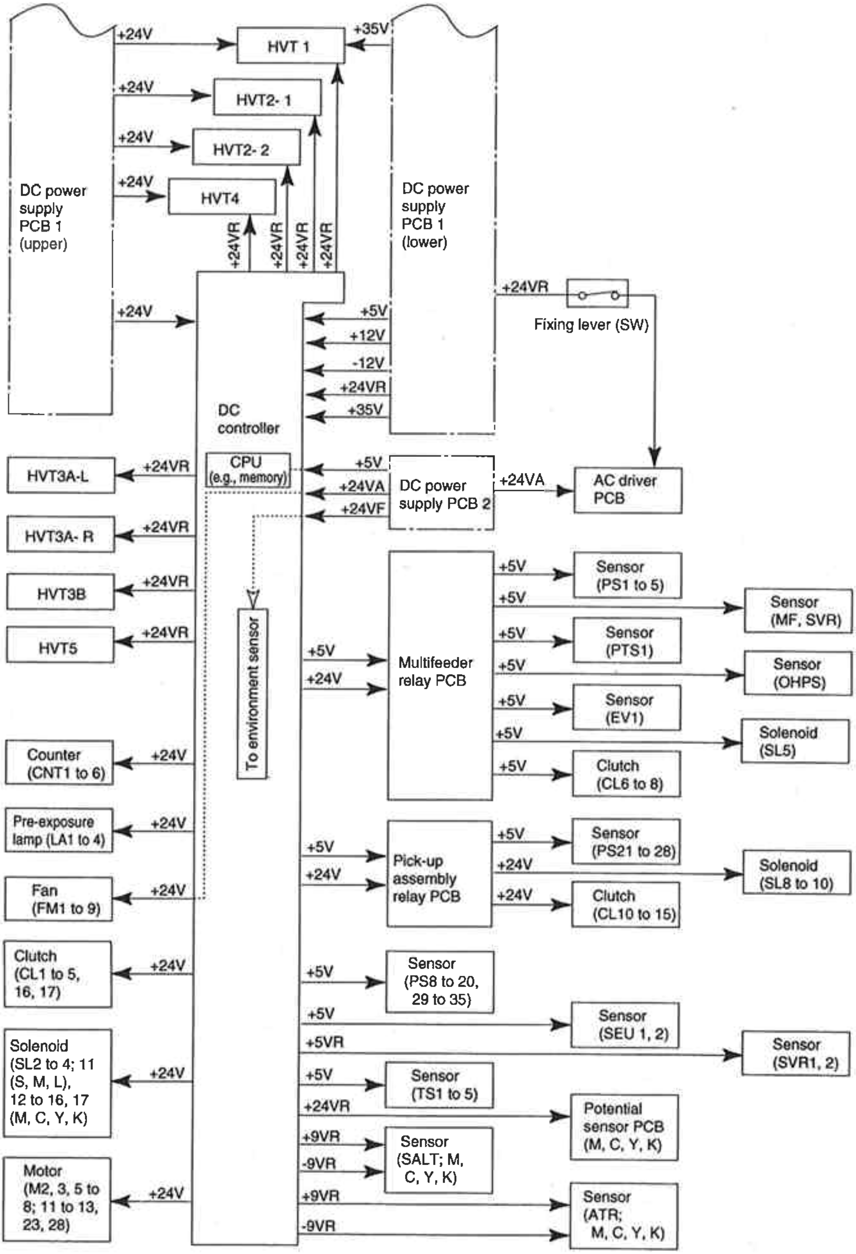

DC power supply PCB 1 (upper)
+24V
HVT 1
+35V
HVT2- 1
HVT2- 2
HVT4
+24VR
DC power supply PCB 1 (lower)
+24VR
Fixing lever (SW)
+5V
+12V
-12V
+35V
DC controller
CPU (e.g., memory)
HVT3A-L
HVT3A- R
HVT3B
HVT5
+24VA
+24VF
DC power supply PCB 2
AC driver PCB
To environment sensor
Multifeeder relay PCB
Sensor (PS1 to 5)
Sensor (MF, SVR)
Sensor (PTS1)
Sensor (OHPS)
Sensor (EV1)
Solenoid (SL5)
Clutch (CL6 to 8)
Counter (CNT1 to 6)
Pre-exposure lamp (LA1 to 4)
Fan (FM1 to 9)
Clutch (CL1 to 5, 16, 17)
Solenoid (SL2 to 4; 11 (S, M, L), 12 to 16, 17 (M, C, Y, K)
Motor (M2, 3, 5 to 8; 11 to 13, 23, 28)
Pick-up assembly relay PCB
Sensor (PS21 to 28)
Solenoid (SL8 to 10)
Clutch (CL10 to 15)
Sensor (PS8 to 20, 29 to 35)
Sensor (SEU 1, 2)
+5VR
Sensor (SVR1, 2)
Sensor (TS1 to 5)
Potential sensor PCB (M, C, Y, K)
+9VR
-9VR
Sensor (SALT; M, C, Y, K)
Sensor (ATR; M, C, Y, K)

Figure 3-1003

CHAPTER 4

MECHANICAL SYSTEM

In this chapter, the CLC1000' s mechanical characteristics are explained while showing how its mechanisms operate and how to disassemble/assemble its parts.

1. Be sure to disconnect the power plug before disassembly/assembly work.
2. Unless otherwise specified, assemble the parts by reversing the steps used to disassemble them.
3. Be sure to identify the screws by type (length, diameter) and location.
4. One of the mounting screws on each cover is equipped with a washer to protect against static electricity; be sure to use the washer when installing such covers.
5. Be sure to fit a washer on the mounting screw used for grounding wires and varistors to ensure electrical continuity.
6. As a rule, do not operate the machine with any of its parts removed.
7. When moving the hopper assembly up/down, place a newspaper or the like on the floor in front of the machine to prevent soiling with falling toner.
8. Keep the following in mind when handling the CCD unit for image position correction:
    - Do not touch the LED assembly or the dust-proofing glass.
    - Do not subject the unit as a hole to a shock, as it is adjusted to high optical precision.
    - Do not apply excessive force when holding the unit to avoid deforming the shutter assembly.
9. Keep the following in mind when replacing the DC power supply unit:
   If you find a melting fuse in the DC power unit, replace the DC power supply unit as a whole. (Mere replacement of the fuse could lead to damage on the machine, as such would not remove the cause of the melting fuse.)
10. Try not to touch the image position correction mirror unit unless you are replacing it. (Avoid any cleaning, if possible.)
11. Do not clean the No. 3 mirror (inside the laser scanner) mounted for each color.

I. EXTERNALS AND CONTROLS 4-1
II. DRIVE SYSTEM 4-10
III. PICK-UP/FEEDING SYSTEM 4-21
IV. TRANSFER UNIT 4-42
V. EXPOSURE SYSTEM 4-56
VI. LASER SYSTEM 4-60
VII. HOPPER SYSTEM 4-72
VIII. CHARGING SYSTEM 4-78
IX. PROCESS UNIT SYSTEM 4-80
X. FIXING SYSTEM 4-94
XI. ELECTRICAL SYSTEM 4-107

I. EXTERNALS AND CONTROLS 4-1
A. Covers 4-1
1. External Covers and Copyboard Glass 4-1
2. Internal Covers 4-2
B. Control Panel 4-3
1. Removing the Control Panel 4-3
C. Fans 4-4
1. Outline 4-4
2. Removing the Delivery Cooling Fan (FM1/2/3) 4-4
3. Removing the Laser Cooling Fan (FM4/5) 4-4
4. Removing the Power Supply Cooling Fan (FM17/18) 4-5
5. Removing the Primary Exhaust Fan (FM6) 4-6
6. Primary Suction Fan (FM8/9) 4-7
7. Removing the Scanner Suction Fan (FM12/13) 4-7
8. Removing the Scanner Cooling Fan (FM10/11) 4-8
9. Removing the Digital Unit Cooling Fan (FM14/15/16) 4-8
10. Removing the Pre-Fixing Feeding Fan (FM7) 4-9
11. Removing the Delivery Assembly Lower Fan 4-9
II. DRIVE SYSTEM 4-10
A. Drum Drive System 4-10
1. Removing the Drum Drive Assembly 4-10
2. Removing the Drum Motor Assembly 4-11
3. Points to Note When Installing the Drum Drive Belt 4-11
B. Developing Motor Assembly 4-11
1. Removing the Developing Motor Assembly 4-11
2. Removing the Developing Motor 4-12
C. Pick-Up Drive Assembly 4-12
1. Outline 4-12
2. Removing the Pick-Up Drive Assembly 4-13
3. Removing the Pick-Up Motor 4-14
D. Scanner Drive Assembly 4-15
1. Removing the Scanner Drive Assembly/Scanner Motor 4-15
2. Adjusting the Belt Tension When Installing the Scanner Motor 4-15
3. Routing the Scanner Cable 4-15
E. Fixing Drive Assembly 4-18
1. Removing the Fixing Drive Assembly/Fixing Motor 4-18
F. Waste Toner Feeding Drive Assembly 4-19
1. Removing the Waste Toner Feeding Drive Assembly/Waste Toner Motor 4-19
2. Removing the Waste Toner Feeding Pipe/Screw 4-20
III. PICK-UP/FEEDING SYSTEM 4-21
A. Paper Deck 4-21
1. Removing the Paper Deck 4-21
2. Removing the Cover 4-21
3. Removing the Pick-Up Roller ... 4-22
4. Removing the Pick-Up/ Feeding Roller 4-22
5. Removing the Separation Roller4-24
6. Positioning the Pick-Up Roller Releasing Solenoid 4-26
7. Adjusting the Paper Surface 4-26
B. Pick-Up Assembly 4-27
1. Removing the Pick-Up Assembly 4-27
2. Removing the Pick-Up Roller ... 4-27
3. Removing the Feeding Roller ... 4-28
4. Removing the Pick-Up Assembly Separation Roller 4-29
5. Adjusting the Separation Roller Pressure 4-30
6. Positioning the Pick-Up RollerReleasing Solenoid (SL9, SL10) 4-31
7. Releasing the Lifter 4-31
8. Left/Right Registration 4-31
9. Removing the Duplexing Pick-Up Roller 4-32
10. Removing the Duplexing Feeding Roller 1 4-33
11. Removing the Duplexing Feeding Roller 2 4-33
C. Multifeeder Assembly 4-35
1. Removing the Multifeeder Tray Assembly 4-35
2. Removing the Multifeeder Assembly 4-35
3. Removing the Multifeeder Assembly Pick-Up Roller 4-35
4. Removing the Multifeeder Assembly Feeding Roller/ Separation Roller 4-36
5. Adjusting the Separation Roller 4-36
6. Releasing the Lifter 4-37

D. Duplexing Unit 4-37
  1. Removing the Duplexing Unit ...4-37
  2. Removing the Duplexing Assembly Feeding Roller 4-37
E. Pre-Fixing Feeding Assembly..4-38
  1. Removing the Pre-Fixing Feeding Assembly 4-38
F. Pre-Duplexing Feeding Assembly 4-38
  1. Removing the Pre-Duplexing Feeding Assembly 4-38
G. Delivery/Reversing Assembly 4-40
  1. Removing the Delivery/ Reversing Assembly 4-40
  2. Removing the Fixing Separation Claw 4-40
IV. TRANSFER UNIT.................................4-42
A. Transfer Unit 4-42
  1a. Removing the Transfer Blade 4-42
  1b. Cleaning the Transfer Blade 4-43
  2. Opening the Transfer Belt Assembly.................................4-43
  3. Removing the Transfer Belt 4-45
  4. Installing the Transfer Belt 4-49
  5. Removing the Transfer Belt Swing Motor (M13) 4-50
  6. Removing the Transfer Belt Assembly.................................4-50
  7. Removing the Transfer Belt Motor (M14).............................4-51
  8. Installing the Transfer Belt Motor..4-51
  9. Removing the Internal Static Eliminating Roller 4-51
  10. Removing the Grounding Roller ...4-52
  11. Cleaning the Grounding Roller ...4-52
  12. Cleaning the Transfer Belt Seam Detecting Sticker 4-52
  13. Cleaning the Transfer Belt Home Position Sensor 4-53
B. Transfer Belt Mount 4-53
  1. Removing the Transfer Cleaning Blade 4-53
  2. When Replacing the Transfer Cleaning Blade 4-53
  3. Removing the Transfer Cleaning Web. 4-54
  4. Removing the Oil Removing Roller 4-54
  5. Removing the Polishing Roller ...4-54
C. Replacing the Separation Paper Guides Static Eliminating Wire.........4-55
V. EXPOSURE SYSTEM 4-56
A. Original Exposure System 4-56
  1. Removing the Scanning Lamp 4-56
  2. Orientation of the Scanning Lamp 4-56
  3. Removing the Standard White Plate 4-57
  4. Removing the Lens Mount Cover, CCD Cover, and CCD Unit 4-57
  5. Removing the Scanner Cover...4-58
B. Pre-Exposure System 4-59
  1. Removing the Pre-Exposure System...................................4-59
VI. LASER SYSTEM 4-60
A. Laser Unit.......................................4-60
  1. Making Preparations for Laser Unit-Related Parts 4-60
  2. Removing the Laser Unit 4-61
  3. Points to Note When Installing the Laser Unit 4-61
  4. Removing the Lens Scanner Motor (M4) 4-63
B. Image Position Correcting Mirror Unit 4-64
  1. Removing the Y Image Position Correcting Mirror Unit 4-64
  2. Points to Note When Installing the Y Image Correcting Mirror Unit 4-65
  3. Removing and Installing the Motors for the Y Image Correcting Mirror.......................................4-65
  4. Shifting the Scanner Unit 4-66
  5. Removing the M Image Position Correcting Mirror Unit 4-68
  6. Removing the C/BK Image Position Correcting Mirror Unit 4-68
  7. Removing the Dust-Proofing Glass.......................................4-69
  8. Removing the BD Unit 4-69
VII. HOPPER SYSTEM...............................4-72
A. Hopper Assembly 4-72
  1. Removing the Hopper Assembly 4-72
  2. Keeping the Hopper Assembly from Tumbling Down 4-74
  3. Removing the Hoppers 4-74
  4. Removing the Toner Level Sensor.......................................4-76
VIII. CHARGING SYSTEM 4-78
A. Primary Charging Assembly 4-78
  1. Outline.......................................4-78
  2. Removing the Primary Charging Assembly 4-78
  3. Removing the Grid Plate 4-78

4. Removing the Primary Charging Assembly Cleaning Pad............4-78
B. Separation/Pre-Fixing Assembly 4-79
1. Removing the Separation/ Pre-Fixing Assembly 4-79
2. Routing the Gut Wire 4-79
IX. PROCESS UNIT SYSTEM 4-80
A. Process Unit 4-80
1. Sliding Out the Process Unit.....4-80
2. Removing the Developing Assembly/Cleaning Unit 4-81
3. Installing the Process Unit 4-83
B. Cleaning Assembly 4-85
1. Separating the Developing Assembly and the Cleaning Unit 4-85
2. Removing the Cleaning Blade ..4-85
3. When Replacing the Cleaning Blade 4-85
4. Removing the Cleaner Side Seal 4-86
5. Removing the Cleaner End Seal 4-87
6. Removing the Cleaning Assembly Scope-Up Sheet.......4-87
C. Developing Assembly 4-87
1. Cleaning the Developing Assembly Upper Cover.............4-87
2. Replacing the Color Toner Density 4-88
D. Photosensitive Drum 4-90
1. Removing the Photosensitive Drum 4-90
2. Cleaning the Photosensitive Drum 4-90
3. Points to Note When Installing the Photosensitive Drum 4-90
E. SALT Sensor 4-91
1. Removing the SALT Sensor 4-91
2. Cleaning the SALT Sensor Unit 4-91
3. Disassembling and Cleaning the Inside of the SALT Sensor Unit. 4-92
F. No. 2 Scoop-Up Sheet 4-93
1. Removing the No. 2 Scoop-Up Sheet.......................................4-93
X. FIXING SYSTEM 4-94
A. Fixing Assembly 4-94
1. Removing the Fixing Assembly 4-94
2. Opening the Upper Fixing Roller Unit...4-95
3. Removing the Upper Fixing Heater 4-96
4. Removing the Lower Fixing Heater 4-97
5. Removing the Upper Fixing Roller 4-97
6. Removing the Lower Fixing Roller 4-98
7. Removing the Fixing Thermistor (upper) Method 1 4-98
8. Removing the Fixing Thermistor (upper) Method 2.......................4-99
9. Removing the Fixing Thermistor (lower) ....4 -99
10. Removing the Fixing Thermal Switch (upper) 4-100
11. Removing the Fixing Thermal Switch (lower).........................4-101
12. Removing the Oil Filter 4-101
13. Removing the Oil Bottle..........4-101
B. Upper Fixing Cleaner Assembly 4-102
1. Removing the Upper Fixing Web...4-102
2. Installing the Upper Fixing Web...4-103
C. Fixing Lower Cleaning Assembly....4-103
1. Removing the Lower Fixing Web/Lower Fixing Blade 4-103
2. Removing the Lower Fixing Blade 4-104
3. Installing the Lower Fixing Blade Mount 4-105
D. Fixing Oil Application Unit 4-105
1. Removing the Oil Applying Roller Blade Unit 4-105
2. Removing the Oil Applying Roller Blade..............................4-106
3. Removing the Oil Applying Roller...4-106
4. Opening the Oil Applying Roller Assembly.................................4-106
XI. ELECTRICAL SYSTEM 4-107
1. Removing the DC Controller PCB...4-107
2. Removing the AC Driver 4-107
3. Removing the Lamp Regulator...............................4-107
4. Removing the Separation HighVoltage Transformer Unit 4-108
5. Removing the Developing Bias High-Voltage Transformer 4-108
6. Removing the Primary High-Voltage Transformer 4-109

7. Removing the DC Power Supply PCB 4-109
8. Removing the Environment Sensor PCB 4-110
9. Removing the Reader Controller 4-110
10. Removing the ECO Board 4-111
11. Removing the Analog Processor 4-111
12. Removing the Image Processor PCB and the Memory PCB 4-112
13. Removing the Video Controller PCB 4-113
14. Removing the Polygon Motor Driver 4-113
15. Removing the Potential Sensor Unit 4-114
16. Removing the Image Position Correction Pattern CCD Unit .. 4-115
17. Cleaning the Shutter 4-116
18. Cleaning the LED 4-116
19. Removing the Transfer High-Voltage Transformer 4-117

I. EXTERNALS AND CONTROLS

A. Covers

1. External Covers and Copyboard Glass

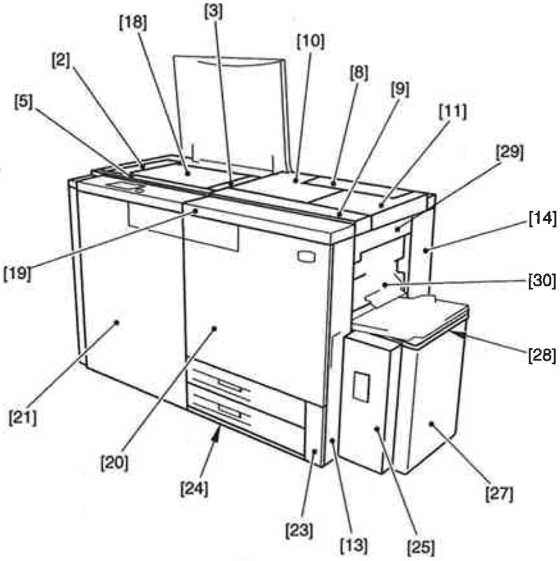

[18]
[3]
[10]
[2]
[8]
[9]
[5]
[11]
[29]
[14]
[19]
[30]
[28]
[21]
[20]
[24]
[27]
[23]
[13]
[25]

Figure 4-101A

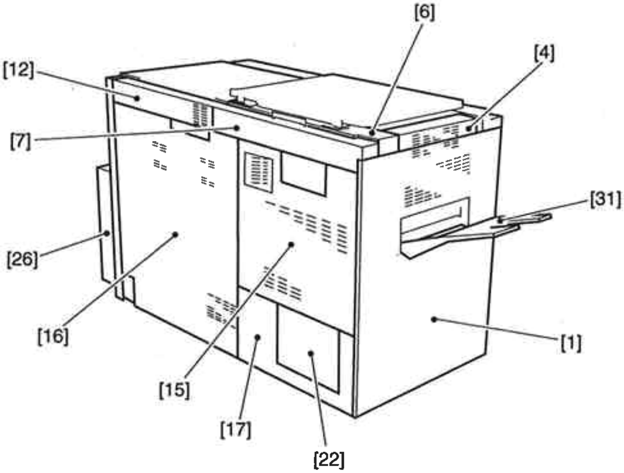

[6]
[4]
[12]
[7]
[31]
[26]
[16]
[1]
[15]
[17]
[22]

Figure 4-102A

[1] Left cover (2)
[2] Vertical size plate (2)
[3] Glass retainer right (2)
[4] Reader unit left cover (4)
[5] Reader unit front cover (2)
[6] Reader unit rear cover (4)
[7] Upper rear left cover (2)
[8] Digital unit cover 1 (2)
[9] Digital unit cover 2 (2)
[10] Digital unit cover 3 (2)
[11] Digital unit cover 4 (4)
[12] Upper rear right cover (2)
[13] Front right cover (2)
[14] Rear right cover (2)
[15] Rear cover 1 (4)
[16] Rear cover 2 (4)
[17] Rear cover 3 (2)
[18] Copyboard glass
[19] Hopper upper cover
[20] Front cover (right)
[21] Front cover (left)
[22] IPU cover
[23] Cassette right cover
[24] Cassette lower cover
[25] Paper deck front cover
[26] Paper deck rear cover
[27] Paper deck cover
[28] Paper deck upper cover
[29] Multifeeder cover 1
[30] Multifeeder cover 2
[31] Copy tray

The number in parentheses indicates the number of mounting screws used.

2. Internal Covers

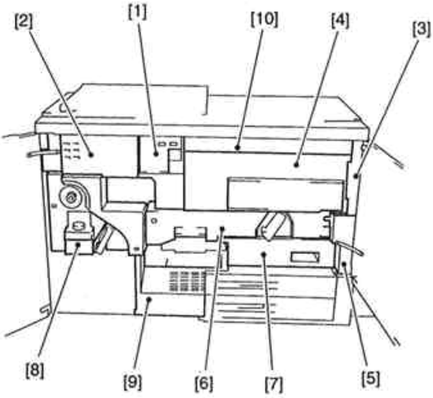


Figure 4-103A

[1] Hopper left cover (1)
[2] Counter cover (2)
[3] Hopper right cover (1)
[4] Hopper lower front cover (4)
[5] Transfer assembly right cover (2)
[6] Transfer assembly front cover (2)
[7] Duplexing unit front cover (4)
[8] Fixing assembly front cover (2)
[10] Hopper top cover (5)

The number in parentheses indicates the number of mounting screws used.

B. Control Panel

1. Removing the Control Panel

1) Remove the left cover.
2) Remove the three screws [1].

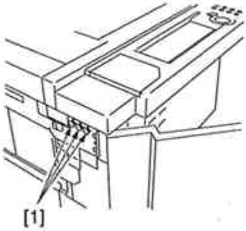


Figure 4-101B

3) Remove the hopper left and right covers [2].

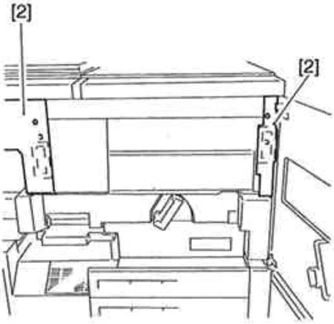


Figure 4-102B

4) Remove the two hopper fixing screws [3].

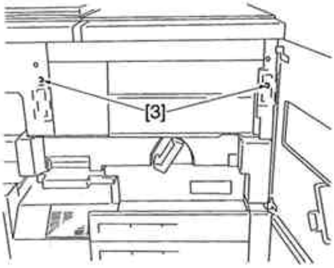


Figure 4-103B

5) Slide out the hopper assembly [4] to the front.

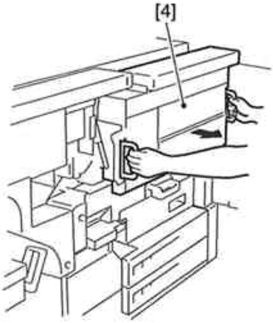


Figure 4-104B

6) Lift the control panel, and disconnect the connector; then, remove the control panel.

C. Fans

1. Outline

2. Removing the Delivery Cooling Fan (FM1/2/3)

1) Remove the left cover.
2) Remove the ozone filter and the air filter.
3) Remove the four screws [1], and remove the fan unit [2].

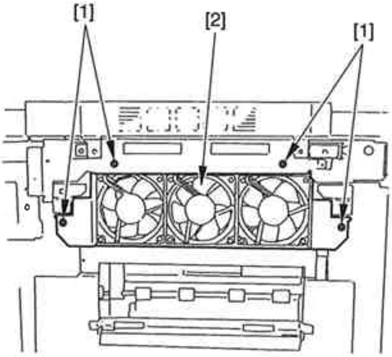


Figure 4-101C

4) Remove the four screws each, and remove the fans from the fan unit.

3. Removing the Laser Cooling Fan (FM4/5)

- **Removing the Air Filters**

1) Remove the multifeeder cover 1/2.
2) Remove the air filters [1].

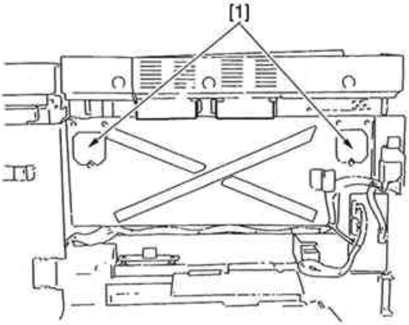


Figure 4-102C

- **Removing the Laser Cooling Fan**

1) Shift up the digital unit.
2) Remove the three screws [1] each, and remove the fans [2].

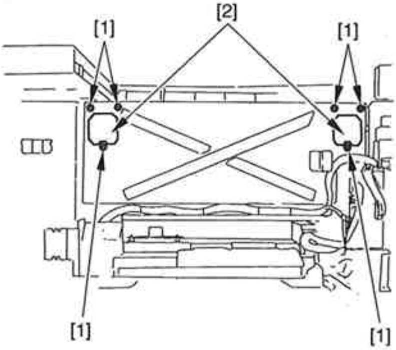


Figure 4-103C

4. Removing the Power Supply Cooling Fan (FM17/18)

- **Removing the Filter**

1) Remove the the two screws [1], and remove the filter cover [2].

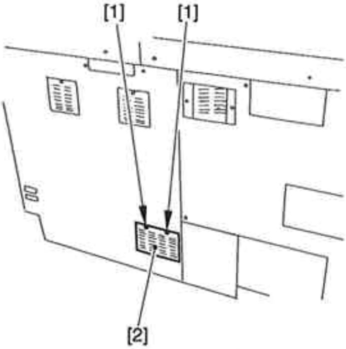


Figure 4-104C

2) Remove the the two screws [3], and remove the filter cover [4].

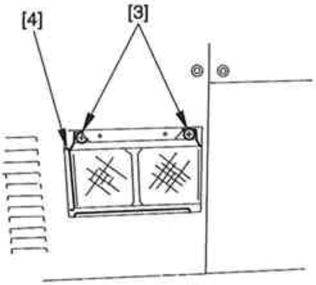


Figure 4-105C

- **Removing the Power Supply Cooling Fan (FM17/18)**

1) Remove the rear cover 1/2.
2) Disconnect the three connectors [1], and remove the four screws [2]; then, remove the fan mount [3].

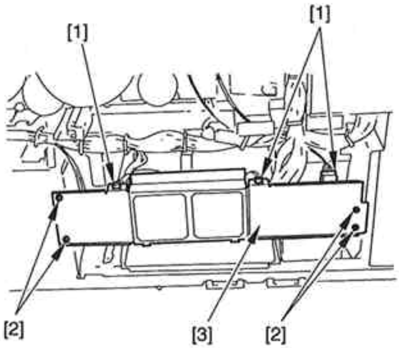


Figure 4-106C

3) Remove the four screws [4], and remove the power supply cooling fan [5].

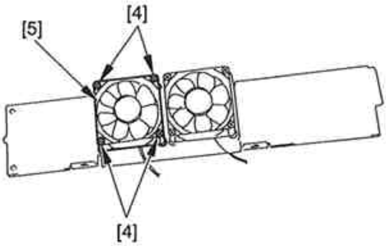


Figure 4-107C

5. Removing the Primary Exhaust Fan (FM6)

- **Removing the Filter**

1) Remove the two screws [1], and remove the filter cover [2] of the rear cover 1.

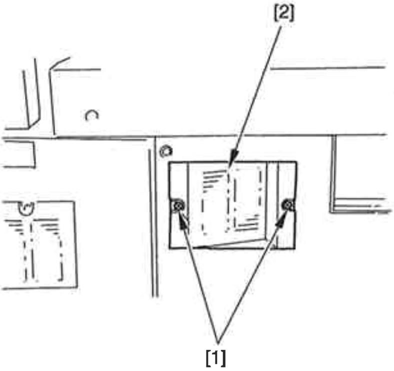


Figure 4-108C

2) Remove the ozone filter [3].

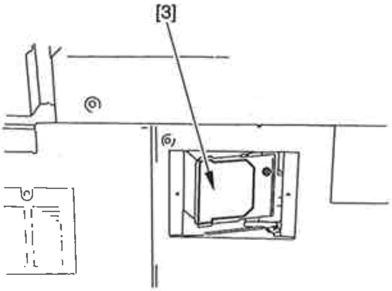


Figure 4-109C

- **Removing the Primary Exhaust Fan**

1) Remove the rear cover 1.
2) Remove the screw [1], and open the DC controller PCB.
3) Disconnect the connector [2], and remove the two screws [3]; then, draw out the fan assembly [4].

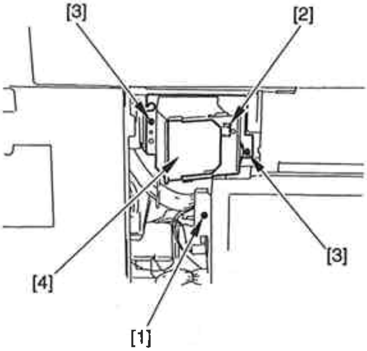


Figure 4-110C

4) Remove the three screws [5], and remove the fan [6].

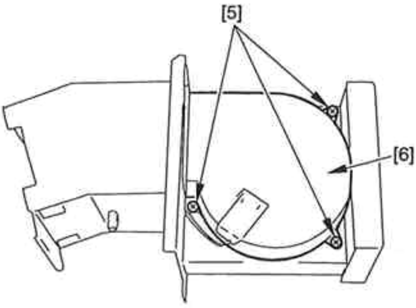


Figure 4-111C

6. Primary Suction Fan (FM8/9)

- **Removing the Filter**

1) Remove the screw [1] (one each), and remove the filter covers from the rear cover [2].

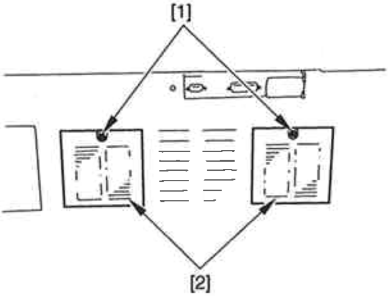


Figure 4-112C

2) Remove the filters.

- **Removing the Primary Suction Fan**

1) Remove the rear cover 2.
2) Disconnect the connectors [1] (one each), and remove the four screws [2] each; then, remove the fan [3].

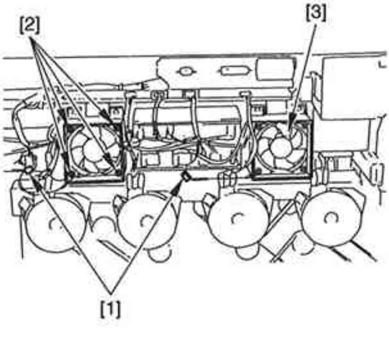


Figure 4-113C

7. Removing the Scanner Suction Fan (FM12/13)

1) Shift up the digital unit.
2) Remove the two screws [1], and shift the analog processor PCB [2].

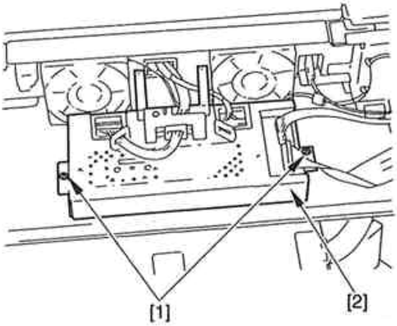


Figure 4-114C

3) Remove the three mounting screws [4], and disconnect the two connectors [5]; then, remove the fan guard plate [3].

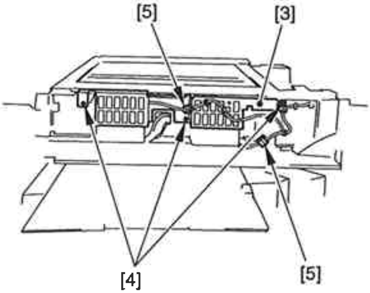


Figure 4-115C

4) Remove the two screws [6] each, and remove the fans [7].

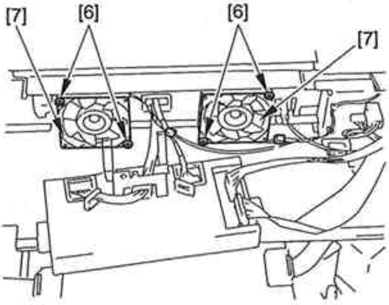


Figure 4-116C

8. Removing the Scanner Cooling Fan (FM10/11)

1) Remove the copyboard glass.
2) Remove the scanner left cover.
3) Remove the seven screws [1], and remove the left stay [2].

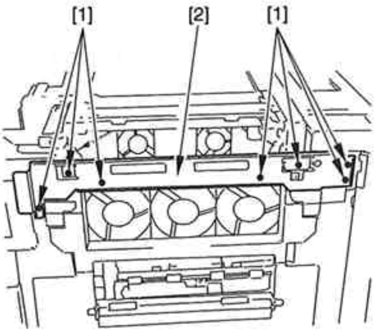


Figure 4-117C

4) Disconnect the connectors [3] (one each), and remove the two screws [4] each; then, remove the fan [5].

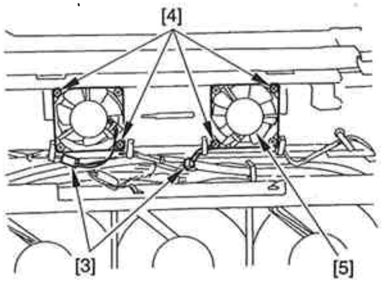


Figure 4-118C

9. Removing the Digital Unit Cooling Fan (FM14/15/16)

- **Removing the Filter**

1) Remove the two screws, and remove the multifeeder cover 1.
2) Remove the filters [1].

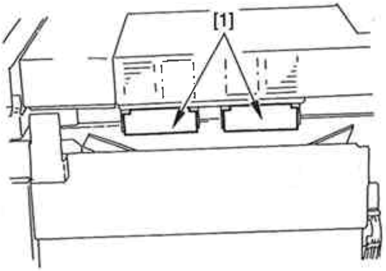


Figure 4-119C

- **Removing the Digital Unit Cooling Fan (FM14/15)**

1) Shift up the digital unit.
2) Disconnect the connector [1] (one each), and remove the four screws [2] each; then, remove the fan [4] together with the fan mount [3].

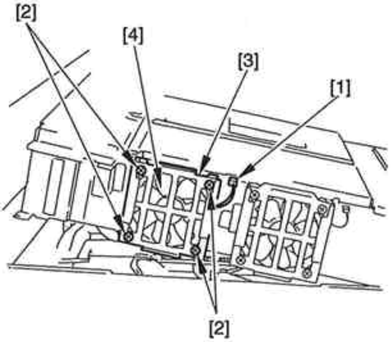


Figure 4-120C

- **Removing the Digital Unit Cooling Fan (FM16)**

1) Shift up the digital unit.
2) Disconnect the connector [1], and remove the two screws [2]; then, remove the fan [3].

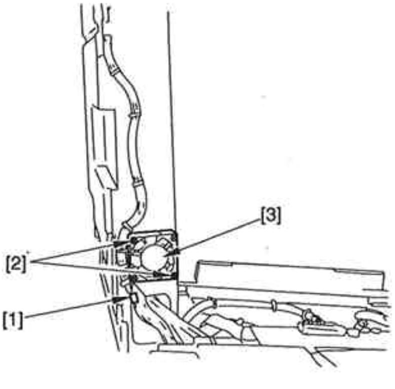


Figure 4-121C

10. Removing the Pre-Fixing Feeding Fan (FM7)

1) Remove the two screws, and remove the counter cover.
2) Remove the pre-fixing feeding assembly.
3) Remove the four screws [1], and remove the fan [2].

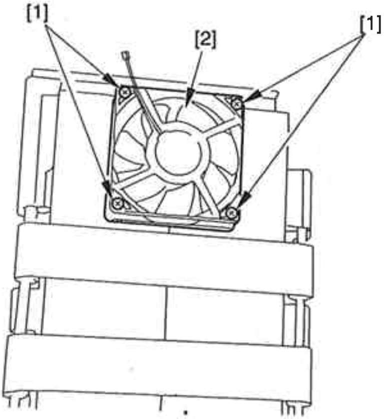


Figure 4-122C

11. Removing the Delivery Assembly Lower Fan

1) Remove the left cover.
2) Disconnect the connector [2], and remove the four screws [3]; then, remove the fan stay [1].

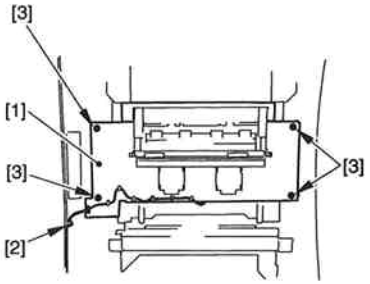


Figure 4-123C

3) Disconnect the connector (one each), and remove the four screws each; then, remove the fan.

II. DRIVE SYSTEM

A. Drum Drive System

1. Removing the Drum Drive Assembly

1) Remove the rear cover 2.
2) Remove the two screws [1] each, and remove the two fly wheels [2].

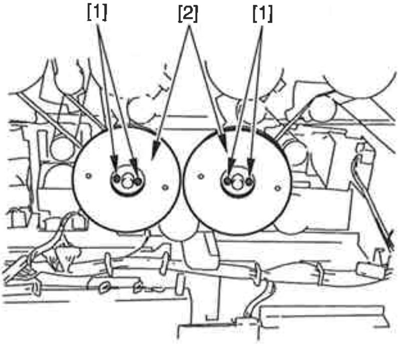


Figure 4-201A

3) Slide out the process unit.
4) Remove the two screws [3] each, and remove the drum heater terminal cover [4].

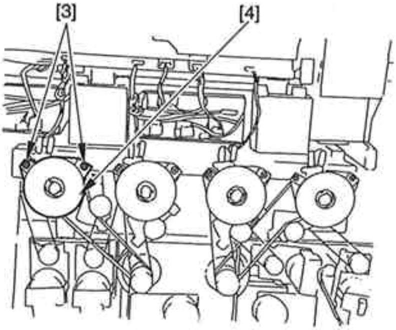


Figure 4-202A

5) Remove the two screws [5] each, and loosen the tensioner plate [6] (four points); then, detach the four belts from the drum drive assembly pulleys.

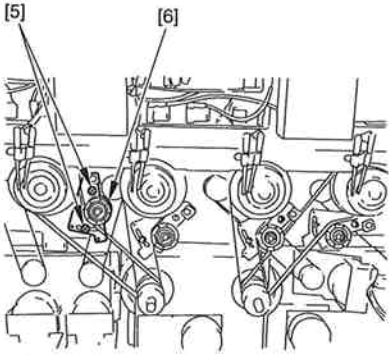


Figure 4-203A

6) Disconnect the two connectors [7], and four screws [8]; then, remove the drum drive assembly [9].

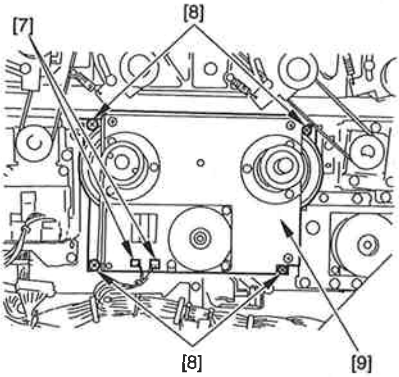


Figure 4-204A

2. Removing the Drum Motor Assembly

1) Remove the two screws each, and remove the two fly wheels.
2) Disconnect the two connectors [1], and remove the four screws [2]; then, remove the drum motor assembly [3].

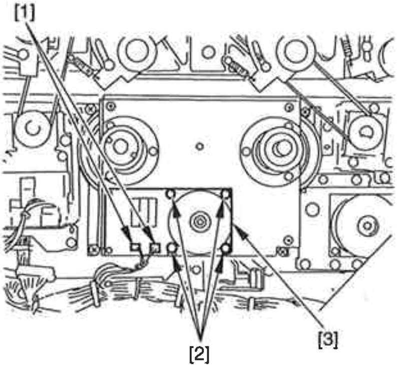


Figure 4-205A

3. Points to Note When Installing the Drum Drive Belt

Install the drum drive belt [2] so that the markings [1] on the drum drive pulleys are all in the same direction.

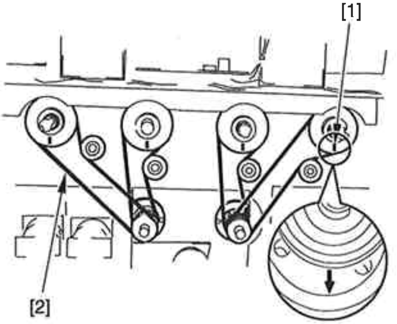


Figure 4-206A

B. Developing Motor Assembly

1. Removing the Developing Motor Assembly

1) Remove the rear cover 1 and the rear cover 2.
2) Remove the two screws, and remove the fly wheel (left). (This applies only when removing the M developing motor assembly.)
3) Remove the two screws [1] each, and disconnect the two connectors [2] each; then, remove the developing motor assembly [3].

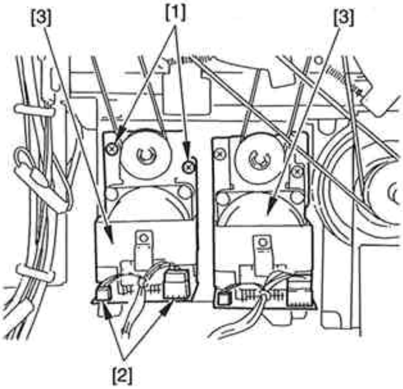


Figure 4-201B
(Y, M developing motor assemblies)

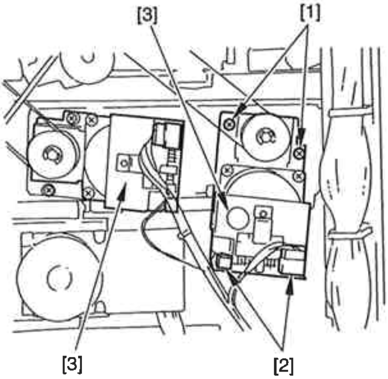


Figure 4-202B
(C, Bk developing motor assemblies)

2. Removing the Developing Motor

1) Remove the rear cover 1 and the rear cover 2.
2) Remove the two screws, and remove the fly wheel (left). (This applies only when removing the M developing motor.)
3) Remove the four screws each [1], and disconnect the two connectors each [2]; then, remove the developing motor [3].

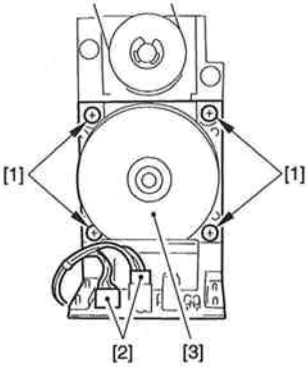


Figure 4-203B

C. Pick-Up Drive Assembly

1. Outline

See Figure 4-201C for how the pick-up drive belt is routed.

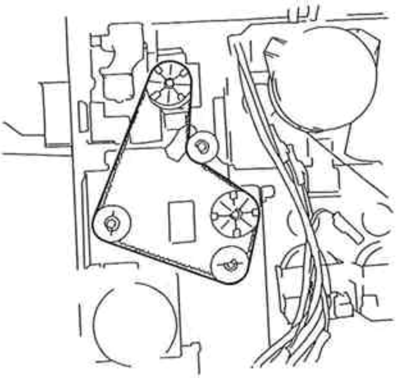


Figure 4-201C

2. Removing the Pick-Up Drive Assembly

1) Remove the rear cover 1/2 and the rear right cover.
2) Disconnect the four connectors [1], and remove the three screws [2]; then, remove the pick-up motor driver PCB [3] together with the support plate.

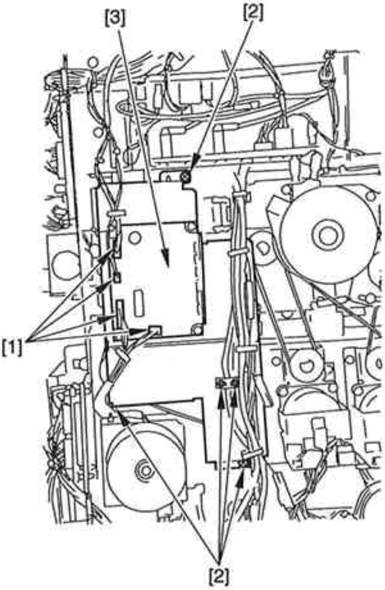


Figure 4-202C

3) Loosen the two screws [4] to loosen the tensioner plate [5]; then, detach the drive belt [6].

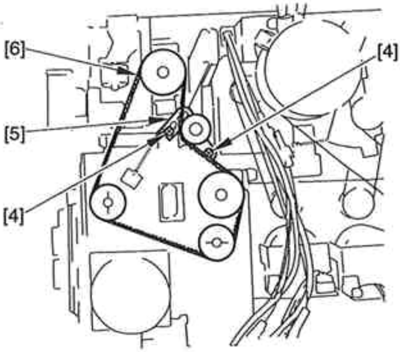


Figure 4-203C

4) Remove the pick-up assembly.
5) Remove the screw [7] from the pick-up relay PCB, and remove the two screws [8] from the pick-up drive assembly.

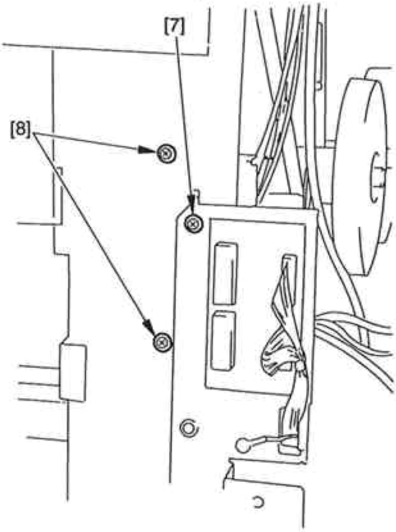


Figure 4-204C

6) Remove the five screws [9], and disconnect the connector [10]; then, remove the pick-up drive assembly [11].

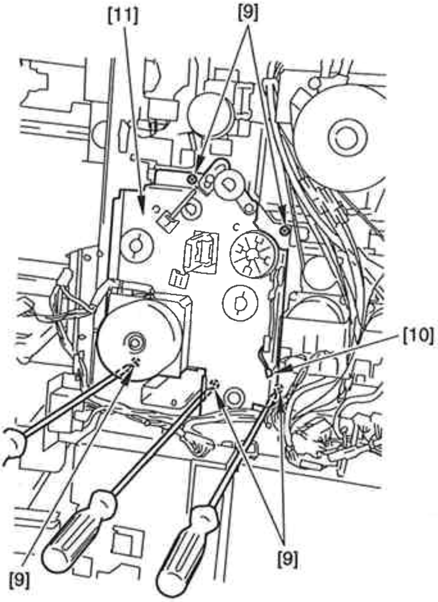


Figure 4-205C

3. Removing the Pick-Up Motor

1) Remove the pick-up drive assembly.
2) Loosen the three screws [1], and shift the tension roller [2]; then, detach the timing belt [3] from the pulley [4].
3) Remove the four screws [6], grip ring [5], and pulley [4]; then, remove the pick-up motor.

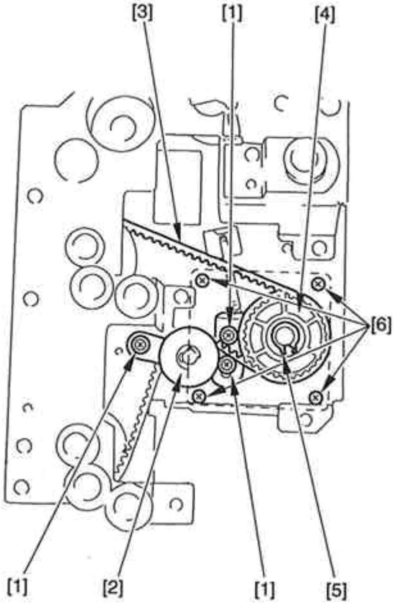


Figure 4-206C

D. Scanner Drive Assembly

1. Removing the Scanner Drive Assembly/Scanner Motor

1) Remove the upper rear left cover and the reader unit rear cover.
2) Disconnect the connector [1], and remove the four screws [2]; then, remove the scanner motor [3] together with the mounting plate.

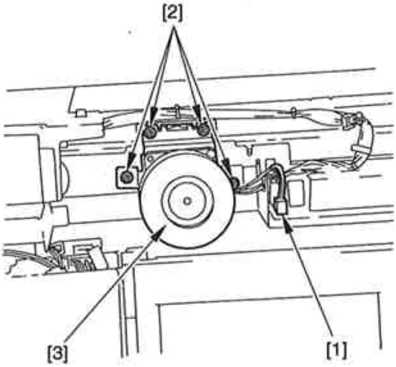


Figure 4-201D

3) Remove the two screws [4], and remove the scanner motor assembly [5].

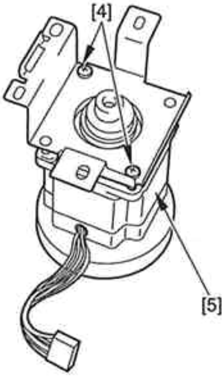


Figure 4-202D

4) Remove the two screws [6], and remove the O-ring [7] from the scanner motor.

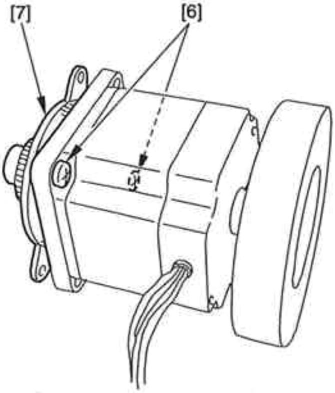


Figure 4-203D

Whenever you have replaced the scanner motor or removed it, be sure to install the O-ring before installing the motor to the machine.

2. Adjusting the Belt Tension When Installing the Scanner Motor

1) When tightening the screw, be sure that the belt is free of slack (i.e., move the motor to the right).

3. Routing the Scanner Cable

- **Keep the mirror positioning tool (FY9-3002-000) near at hand when routing the scanner cable.**

1) Remove the left cover and the hopper left cover.
2) Remove the control panel.
3) Remove the vertical size plate and the glass retainer right; then, remove the copyboard glass.

4) Move the No. 2 mirror mount so that the pulley shaft [1] of the No. 2 mirror mount is visible through the long hole [2] in the side plate.

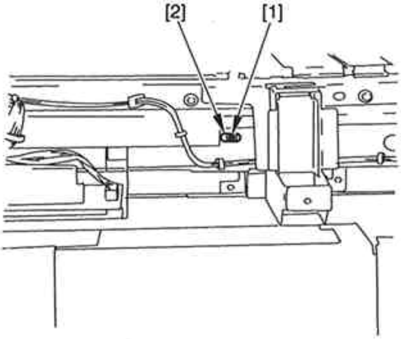


Figure 4-204D (rear)

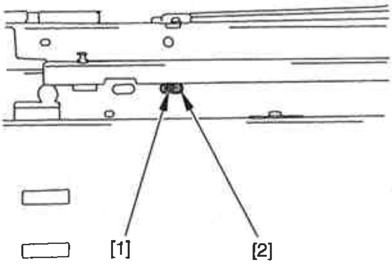


Figure 4-205D (front)

5) Fit the binding screw [3] (M4x8) to the pulley shaft [4] so that the pulley may be temporarily fixed to the side plates [5] found at the front and the rear of the pulley, thereby temporarily fixing the No. 2 mirror mount in place.

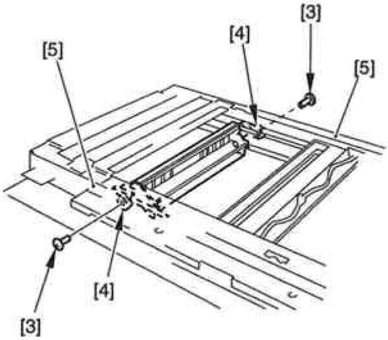


Figure 4-206D

6) Route the scanner cable on the pulleys and hooks as indicated in Figure 4-207D.

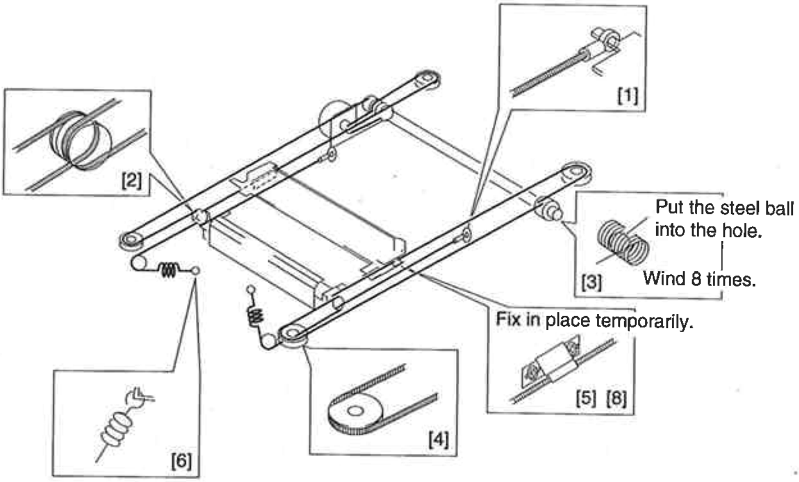

[1]
[2]
Put the steel ball into the hole.
[3]
Wind 8 times.
Fix in place temporarily.
[5] [8]
[4]
[6]

Figure 4-207D

7) Remove the screw [3] used in step 5).
8) Loosen the screw on the mirror positioning tool (FY9-3002-000), and extend the arm [6] fully.

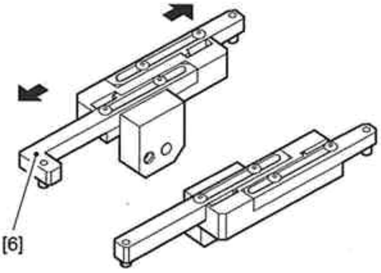


Figure 4-208D

9) Install the mirror positioning tool [7] between the No. 1 mirror mount and the No. 2 mirror mount; and insert the pin [8] that comes with the mirror positioning tool.

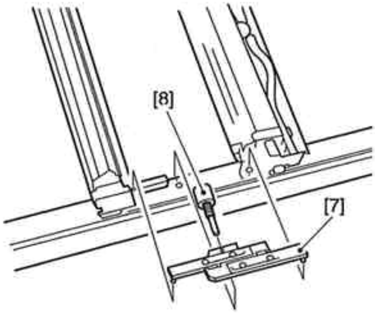


Figure 4-209D

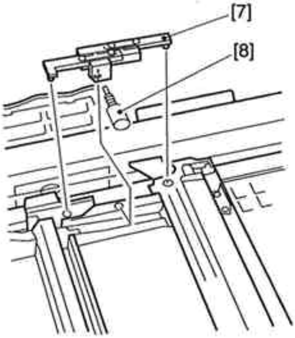


Figure 4-210D

10) Install the metal fixing [10] of the scanner cable to the No. 1 mirror mount using the hole in the side plate with two screws [9].

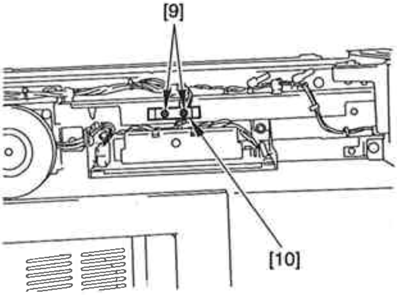


Figure 4-211D

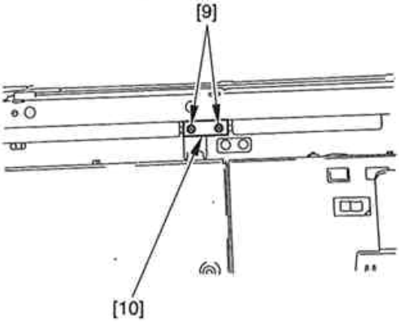


Figure 4-212D

11) Remove the mirror positioning tool.

REF. The CLC1000 does not require adjustment of the cable tension.

E. Fixing Drive Assembly

1. Removing the Fixing Drive Assembly/Fixing Motor

1) Remove the rear cover 1.
2) Remove the screw, and open the DC controller PCB.
3) Remove the two screws [1], and disconnect the four connectors [2]; then, remove the fixing motor driver [3].

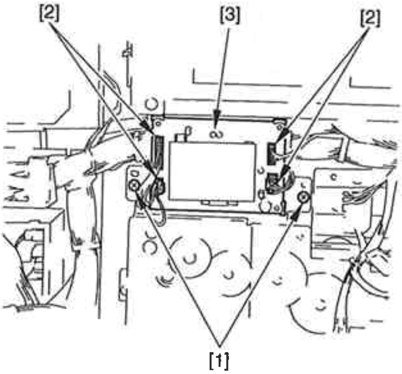


Figure 4-201E

4) Remove the five screws [4], and remove the fixing drive assembly [5].

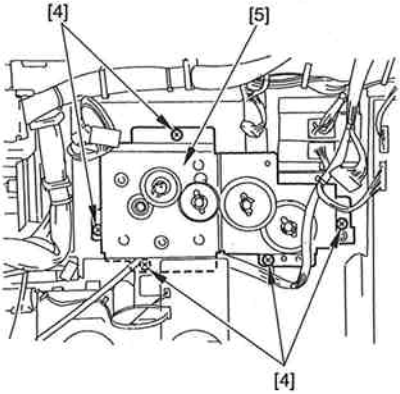


Figure 4-202E

5) Remove the four screws [6], grip ring [7], and gear [8]; then, remove the fixing motor [9].

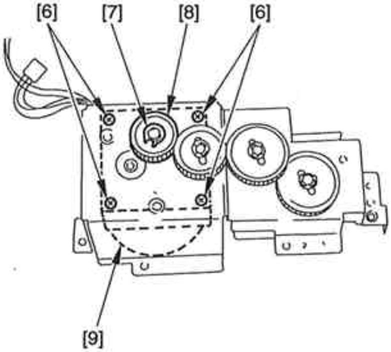


Figure 4-203E

F. Waste Toner Feeding Drive Assembly

1. Removing the Waste Toner Feeding Drive Assembly/Waste Toner Motor

1) Disconnect the two connectors [1], and remove the four screws [2]; then, remove the waste toner motor [3].

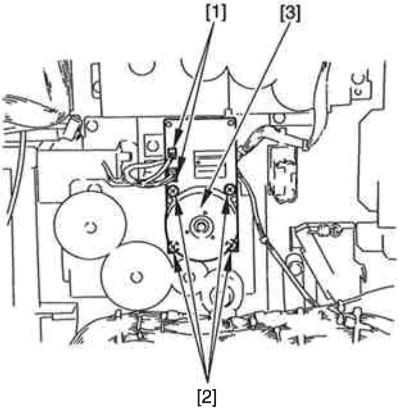


Figure 4-201F

2) Disconnect the connector [4], and remove the four screws [5]; then, slide out the waste toner feeding assembly [6] to the front while shifting it to the right.

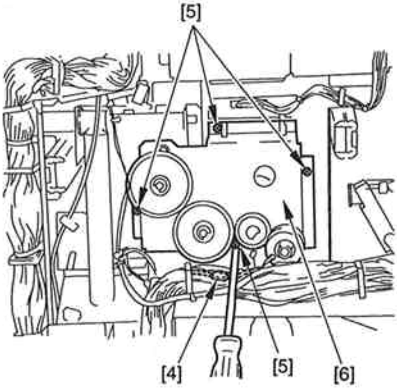


Figure 4-202F

2. Removing the Waste Toner Feeding Pipe/Screw

1) Remove the waste toner cover, and take out the waste toner box from the machine.
2) Remove the waste toner motor and the waste toner feeding drive assembly.
3) Remove the five screws [1], and free the top plate [2] of the power supply assembly.

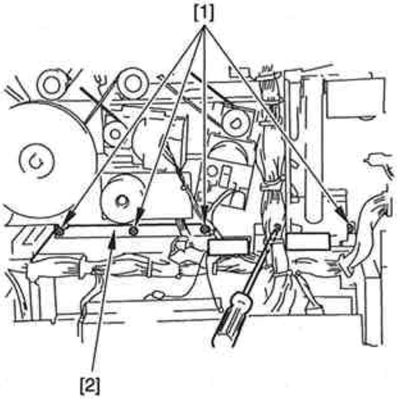


Figure 4-203F

4) Remove the two screws [3], and pull out the waste toner feeding vertical pipe [4] by shifting it to the bottom.

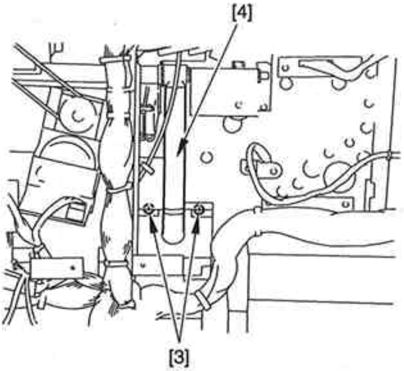


Figure 4-204F

5) Detach the Bk developing assembly drive belt [5].

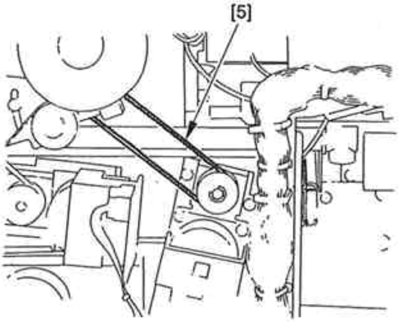


Figure 4-205F

6) Remove the two fastons [6] of the micro switch, and remove the three screws [7]; then, pull out the waste toner feeding screw drive assembly [8] and the waste toner pipe [9] toward the right front.

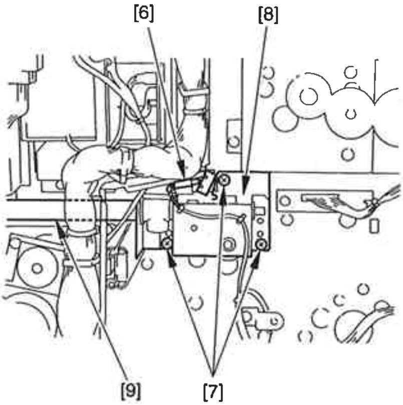


Figure 4-206F

⚠ Work with care so as not to spill the waste toner from the waste toner pipe.

III. PICK-UP/FEEDING SYSTEM

A. Paper Deck

1. Removing the Paper Deck

1) Disconnect the connector of the paper deck from the copier.
2) Slide out the paper deck.
3) Remove the fixing screws [1] from the rail (front, rear) of the paper deck.

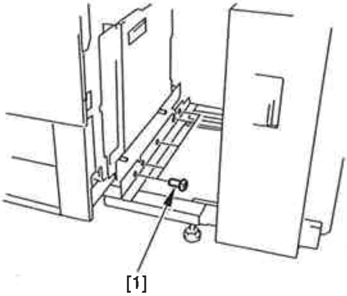


Figure 4-301A

2. Removing the Cover

1) Remove the four mounting screws [3] each, and remove the paper deck front cover [1] and the paper deck rear cover [2].

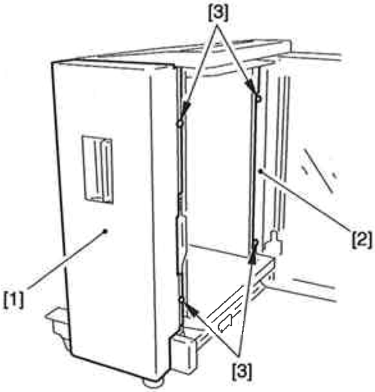


Figure 4-302A

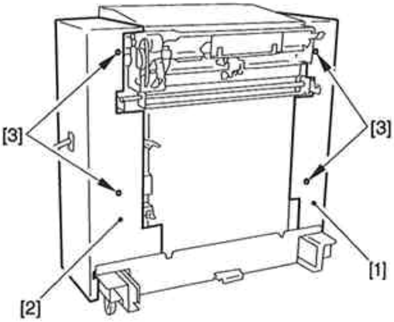


Figure 4-303A

2) Remove the four mounting screws [5], and remove the paper deck top cover [4].

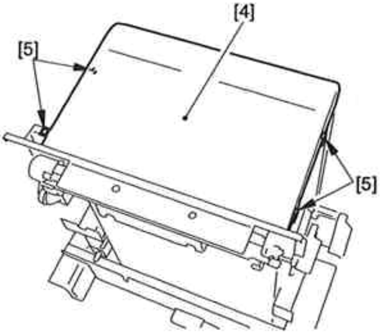


Figure 4-304A

3. Removing the Pick-Up Roller

1) Remove the four screws [1], and disconnect the connector [2]; then, remove the paper deck and the heater [3].

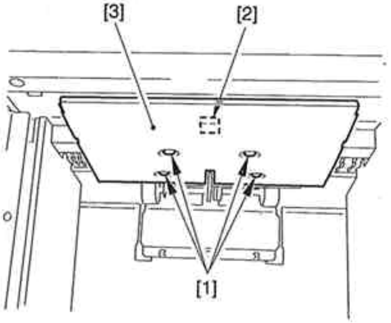


Figure 4-305A

2) Open the paper deck cover, and remove the resin E-ring [4] at the front and the resin E-ring [4] at the rear; then, remove the pick-up roller [5].

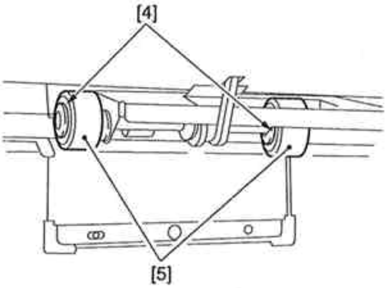


Figure 4-306A

Take care not to drop the parallel pin from the pick-up roller shaft.

- **Orientation of the Pick-Up Roller**
  The pick-up roller rotates in a specific direction.

When installing the pick-up roller to the pick-up roller shaft, install it so that the marking "8" shown in Figure 4-307A is toward the rear of the machine.

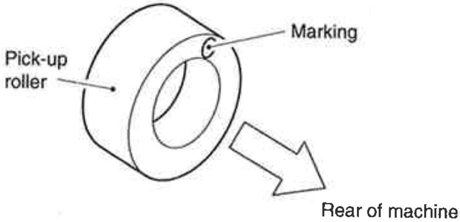


Figure 4-307A

4. Removing the Pick-Up/Feeding Roller

1) Remove the four screws, and disconnect the connector; then, remove the paper deck heater.
2) Remove the pick-up roller from the front.
3) Pull out the push lock used to fix the side guide plate (left, right) in place to free the side guide plate.
4) Insert a screwdriver into the hole for the push lock, remove the screw [1], and remove the roller stopper plate [2].

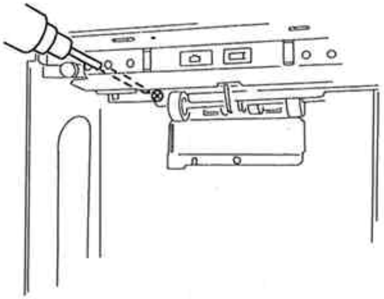


Figure 4-308A

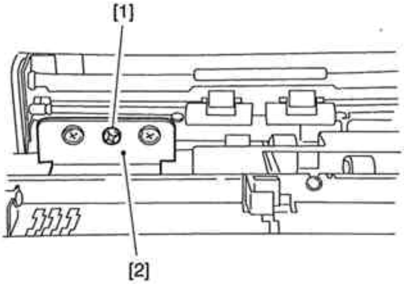


Figure 4-309A

5) Remove the resin E-ring [4] and the bushing [5]; then, remove the pick-up roller shaft [6] toward the rear.

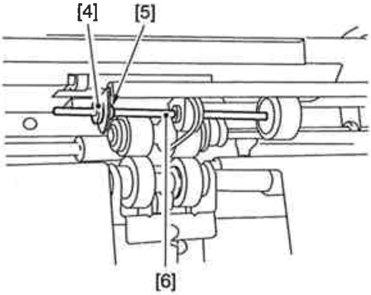


Figure 4-310A

6) Remove the mounting screw [7], and remove the separation roller assembly cover [8].

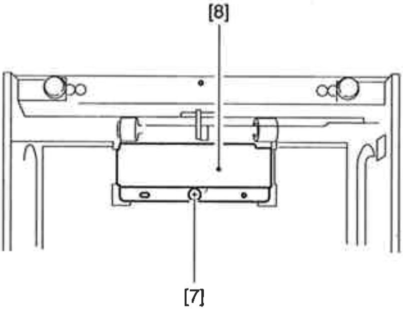


Figure 4-311A

7) Remove the resin E-ring [9].
8) While pushing down the separation roller assembly [10], remove the timing belt [11], and remove the pick-up/feeding roller assembly [12].

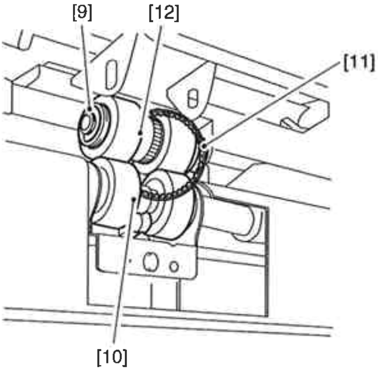


Figure 4-312A

- **Orientation of the Pick-Up/Feeding Roller**
  The pick-up/feeding roller rotates in a specific direction.

  When installing the pick-up/feeding roller, install it so that the marking shown in Figure 4-313A is toward the rear of the machine.

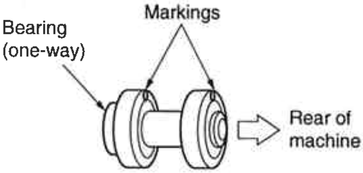


Figure 4-313A

5. Removing the Separation Roller

1) Open the paper deck cover, and remove the mounting screw [1]; then, remove the separation roll assembly cover [2].

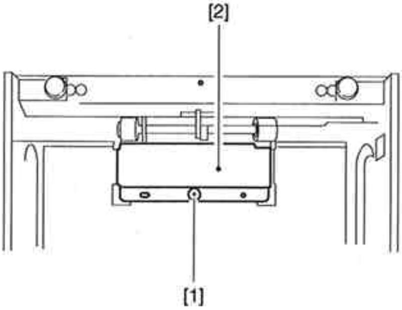


Figure 4-314A

2) Remove the mounting screw [3]; while pushing down the separation roller pressure roll [4], remove the separation roller assembly [5] together with the support plate.

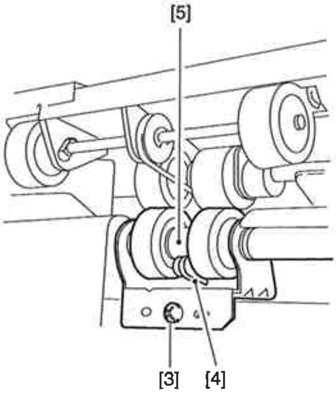


Figure 4-315A

3) Remove the resin E-ring [6] and the bearing [7] from the front of the separation roller assembly; then, pull out the separation roller shaft [8] from the separation roller assembly to remove the separation roller [9].

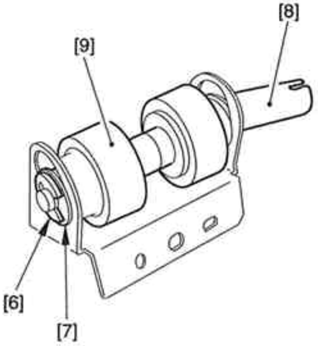


Figure 4-316A

- **Orientation of the Separation Roller**

The separation roller rotates in a specific direction.

1) When installing the separation rubber roller, make sure that the marking shown in Figure 4-317A is toward the coupling (rear of machine).

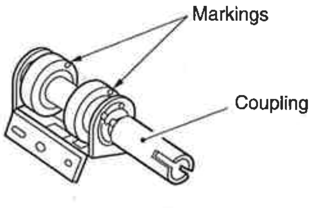


Figure 4-317A

2) When installing the separation roller, make sure that the rib provided for identifying the direction on the roller collar is toward the front of the machine.

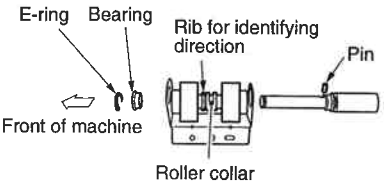


Figure 4-318A

■ Adjusting the Pressure of the Paper Deck Separation/Feeding Roller

If pick-up faults occur or double-feeding occurs frequently, change the position of the spring hooked on the retard stay.

[1] If pick-up faults (failure) occur, increase the pressure.

[2] If double-feeding occurs, decrease the pressure.

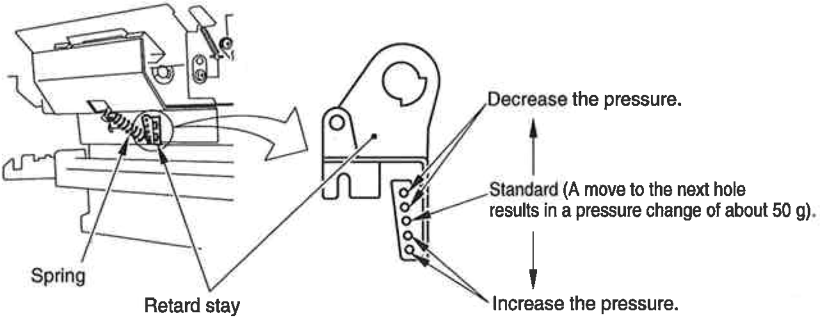

Decrease the pressure.
Standard (A move to the next hole results in a pressure change of about 50 g).
Increase the pressure.
Spring
Retard stay

Figure 4-319A

6. Positioning the Pick-Up Roller Releasing Solenoid

1) Place one sheet of paper on the paper deck lifter, and turn on the power.
2) When the lifter has stopped to move up, turn off the power switch, and open the paper deck cover.
3) Remove the paper deck cover (rear).
4) Install the solenoid so that the pick-up roller is up 4.0 ±1 mm from the surface when the plunger of the pick-up roller releasing solenoid is pushed in.

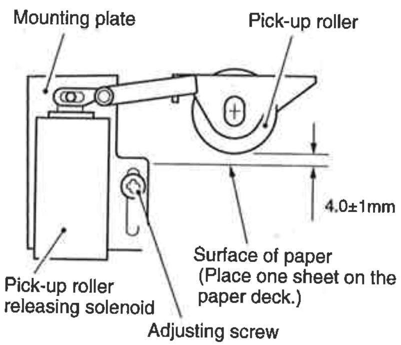
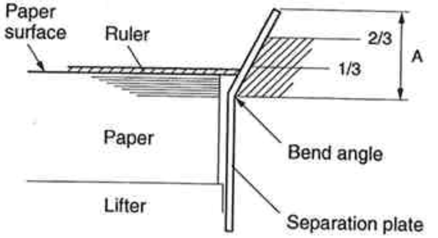

Mounting plate
Pick-up roller
4.0±1mm
Surface of paper
(Place one sheet on the paper deck.)
Pick-up roller releasing solenoid
Adjusting screw

Figure 4-320A

7. Adjusting the Paper Surface

1) Remove the paper deck upper cover.
2) Set paper on the paper deck, and cause the lifter to move up.
3) Place a ruler or the like on the paper, and check the position by butting the ruler against the separation plate on the pick-up side.


Paper surface
Ruler
2/3
1/3
A
Paper
Bend angle
Lifter
Separation plate

Standard: Correct if the paper surface is within the bottom two-thirds (shaded) with reference to the bend angle.

Figure 4-321A

4) If the paper surface is not as indicated, loosen the adjusting screw on the paper sensor plate; then, move the paper sensor support plate up and down to adjust the position of the sensor.
   - If the paper surface is low, move up the paper sensor support plate.
   - If the paper surface is high, move down the paper sensor support plate.

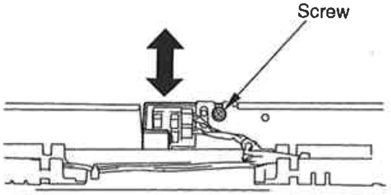


Figure 4-322A

B. Pick-Up Assembly

1. Removing the Pick-Up Assembly

1) Remove the five screws, and remove the paper deck.
2) Remove the front right cover and the rear cover.
3) Slide out the cassette 1/2 and the duplexing unit.
4) Disconnect the two connectors [1], and remove the six screws [2]; then, remove the pick-up assembly [3].

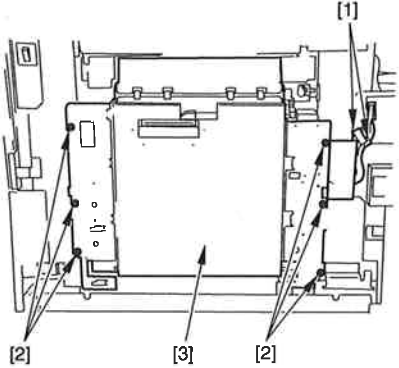


Figure 4-301B

- **Making Adjustments after Installing the Pick-Up Assembly/Pick-Up Motor**

  Be sure to perform the following after installing the pick-up assembly or the pick-up motor:

1) Put A4 or LTR copy paper in the cassette 1/2.
2) Turn on the power, and wait until warm-up ends.
3) Set the copy count to '1' on the control panel.
4) Start service mode, and select 'FUNK P-UP-TMG'.
5) Press 'PK-ADJ-U'. (Pick-up starts from the cassette 1.)
6) Repeat the operation two more times.
7) Press 'D-SEND-U'. (The measurement data will be written to the DC controller.)
8) Press 'PK-ADJ-L'. (Pick-up starts from the cassette.)
9) Repeat the operation two more times.
10) Press 'D-SEND-L'. (The measurement data will be written into the DC controller.)
11) Record the value of 'PUDT-U/L' on the service label.
12) End service mode.

2. Removing the Pick-Up Roller

1) Remove the pick-up assembly.
2) Remove the two E-rings [1] (resin), and remove the two pick-up rollers [2] together with the collars.

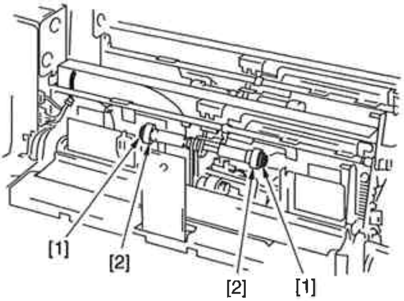


Figure 4-302B

a. When installing the pick-up roller [1] to the pick-up assembly, make sure that the round marking [2] on the rubber portion is toward the front of the machine.

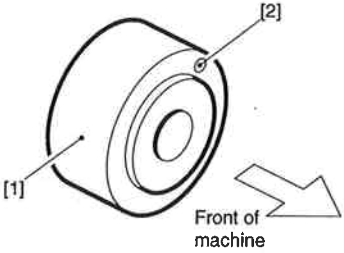


Figure 4-303B

The pick-up roller is identified by the color of its collar as follows:

front: gold
rear: silver

b. Do not remove the rubber portion of the pick-up roller from the collar.

3. Removing the Feeding Roller

1) Remove the pick-up assembly.
2) Remove the screw [1], and remove the upper guide [2].

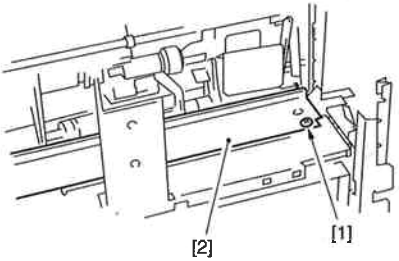


Figure 4-304B

3) Remove the screw [3], and remove the pick-up roller arm bushing [4].

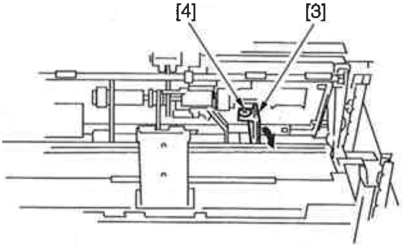


Figure 4-305B

4) Remove the E-ring [5] (resin), and remove the pick-up roller [6] from the rear.
5) Remove the E-ring [7] (resin).

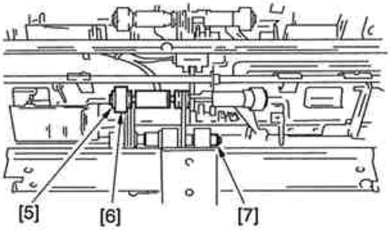


Figure 4-306B

6) Pull out the feeding roller from the shaft [9] together with the belt pick-up roller shaft [8].

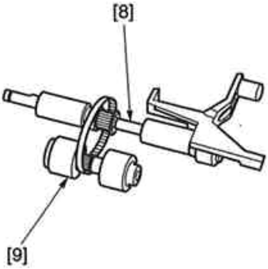


Figure 4-307B

1. When removing the pick-up roller shaft or the like, take extra care not to damage the sensors found around the part.
2. When installing the feeding roller [1] to the pick-up assembly, install it so that the gear [2] of the feeding roller is toward the rear of the machine.

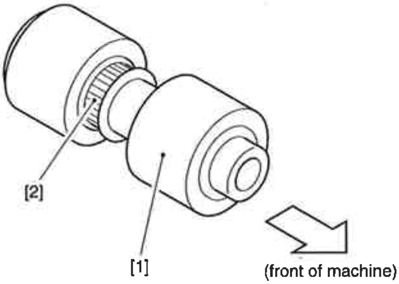


Figure 4-308B

4. Removing the Pick-Up Assembly Separation Roller

1) Remove the pick-up assembly.
2) Remove the screw [2], and remove the lower guide [1].

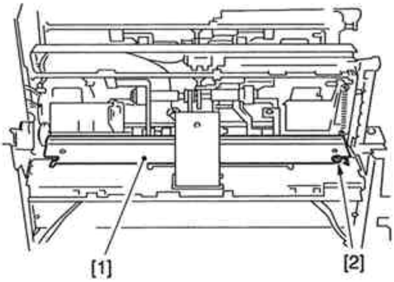


Figure 4-309B

3) Remove the two screws [4], and remove the separation roller unit [3].

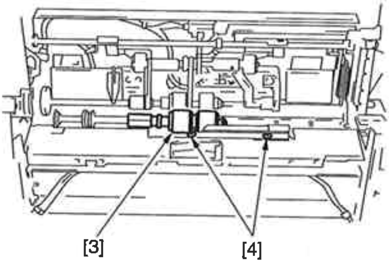


Figure 4-310B

4) Remove the two E-rings [5] (resin).
5) Pull out the separation roller shaft [6], and remove the separation roller [7].

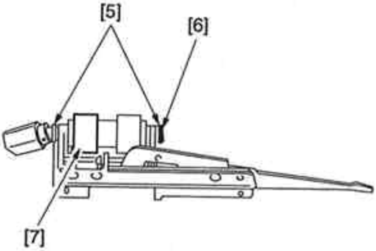


Figure 4-311B

5. Adjusting the Separation Roller Pressure

1) Remove the pick-up assembly.
2) Remove the screw [2], and remove the lower guide [1].

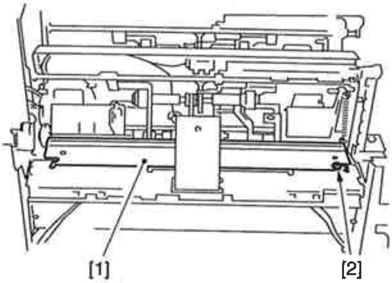


Figure 4-312B

3) If double-feeding or pick-up faults occur during pick-up operation, adjust the position of the pressure spring [4] of the separation roller [3].
   - If double-feeding occurs, hook the spring on A.
   - If pick-up faults occur, hook the spring on B.

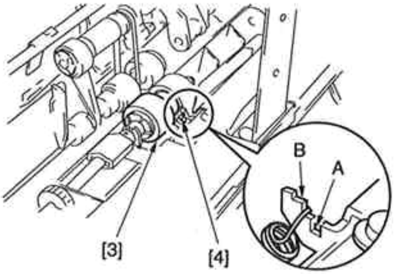


Figure 4-313B

6. Positioning the Pick-Up Roller Releasing Solenoid (SL9, SL10)

Install the solenoid so that the pick-up roller arm [1] butts against the upper stay [2] when the plunger of the solenoid is pushed in.

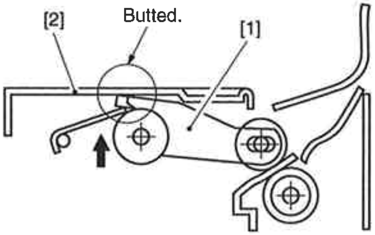


Figure 4-314B

7. Releasing the Lifter

If the lifter [1] is up, push down the lifter releasing arm [2] to lower it.

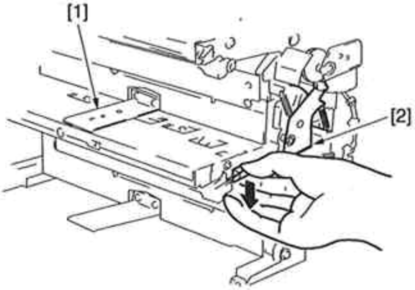


Figure 4-315B

8. Left/Right Registration

1) Select 'ATTRACT' under 'FUNC' in service mode.
2) Select the pick-up assembly using 'ATT-SLCT'.
3) Press 'ATT-ON'.
   (Paper will be picked up automatically and remain attracted to the transfer belt.)
   At this time, make adjustments so that the distance L between the paper edge (front of paper) [1] and the front plate [3] of the transfer unit [2] is 74.7 ±0.5 mm. (If LTR, 83.7 ±0.5 mm.)
4) Slide out the duplexing unit (if cassette 1) or the cassette 1 (if cassette 2).
5) Loosen the screw [4], and adjust the position of the cassette hook plate [5] as indicated.

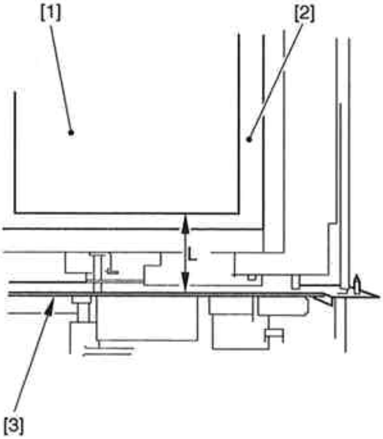


Figure 4-316B

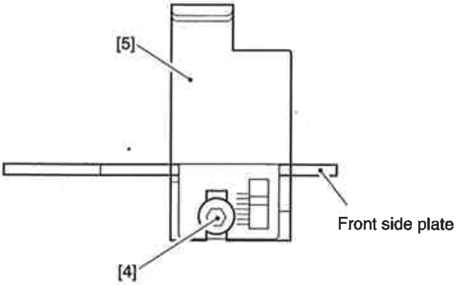


Figure 4-317B

9. Removing the Duplexing Pick-Up Roller

1) Remove the pick-up assembly.
2) Remove the E-ring [1] (resin), and remove the pick-up roller [2] together with the collar.

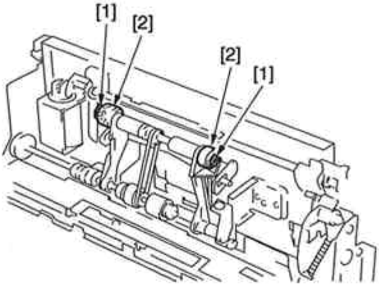


Figure 4-318B

a. When installing the pick-up roller [1], install it so that the round marking [2] on the rubber portion s toward the front of the machine.

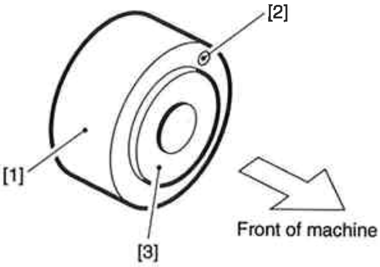


Figure 4-319B

The pick-up roller is identified by the color of the collar.

front: gold
rear: silver

b. Do not remove the rubber portion of the pick-up roller from the collar.

10. Removing the Duplexing Feeding Roller 1

1) Remove the pick-up assembly.
2) Remove the screw [1], and remove the pick-up roller arm bushing [2].
3) Removing the E-ring [3] (resin)

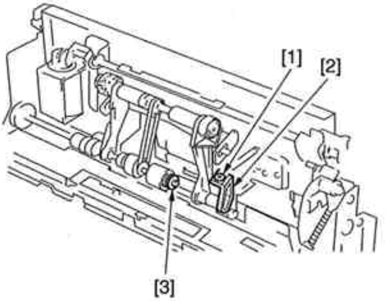


Figure 4-320B

4) Pull out the feeding roller [5] together with the belt [4].

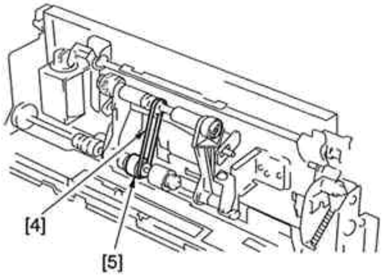


Figure 4-321B

When installing the feeding roller [1] to the pick-up assembly, install it so that the gear [2] on the feeding roller is toward the rear of the machine.

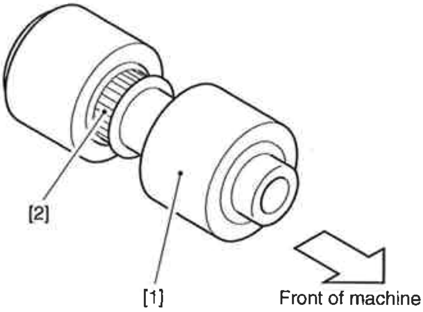


Figure 4-322B

11. Removing the Duplexing Feeding Roller 2

1) Remove the pick-up assembly, and open the pick-up assembly cover.
2) Remove the screw [1], and remove rhe positioning pin [2]
3) Remove the registration roller [2} inlet guide [3].

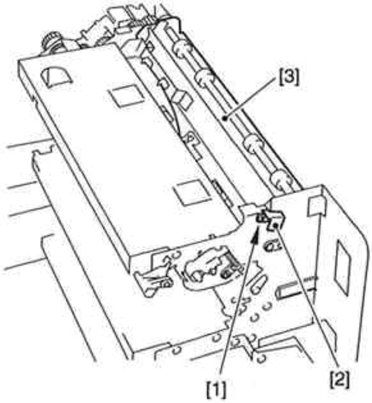


Figure 4-323B

4) Remove the two screws [4], and remove the two positioning pins [5].
5) Shift the sensor plate [6] to the rear to remove.

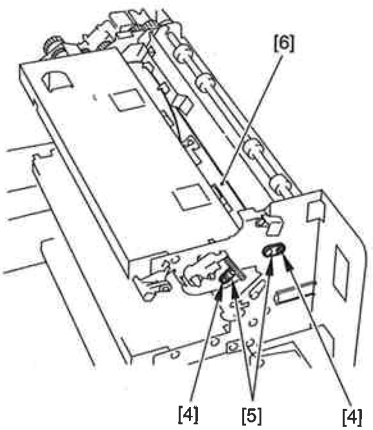


Figure 4-324B

6) Remove the two E-rings [7].
7) Shift the two feeding roller 2 bushings [8] toward the inside, and remove them together with the shaft [9].

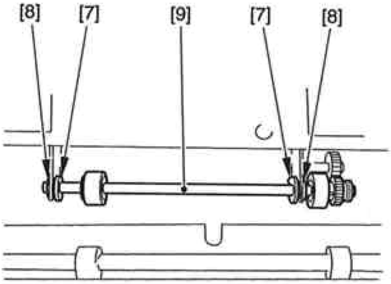


Figure 4-325B

8) Remove the two E-rings [10] (resin) and the gear [11], and remove the feeding roller 2 from the shaft.

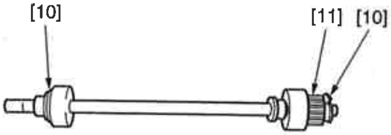


Figure 4-326B

⚠ The gear is fixed in place to the feeding roller 2 shaft with a parallel pin. Take care not to drop the pin.

C. Multifeeder Assembly

1. Removing the Multifeeder Tray Assembly

1) Remove the front right cover and the rear cover.
2) Remove the multifeeder cover 1/2.
3) Remove the two screws [1], and remove the face cover [2].

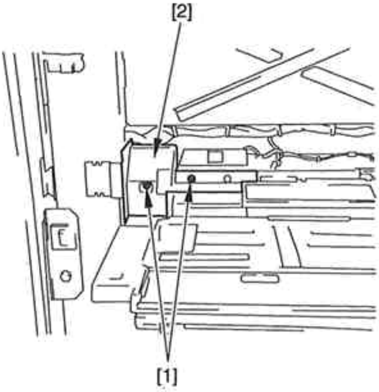


Figure 4-301C

4) Disconnect the connector 1 [3], and remove the four screws [4]; then, remove the multifeeder tray assembly [5].

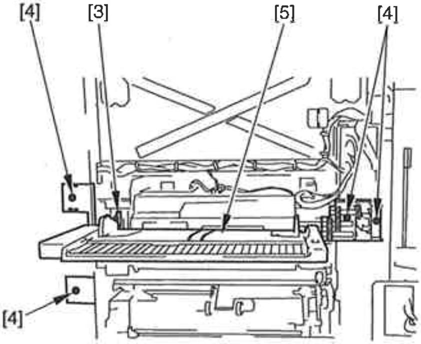


Figure 4-302C

2. Removing the Multifeeder Assembly

1) Remove the multifeeder tray assembly.
2) Disconnect the four connectors [1], and remove the two screws [2]; then, shift the multifeeder assembly [3] in the direction of the arrow, and remove it to the front.

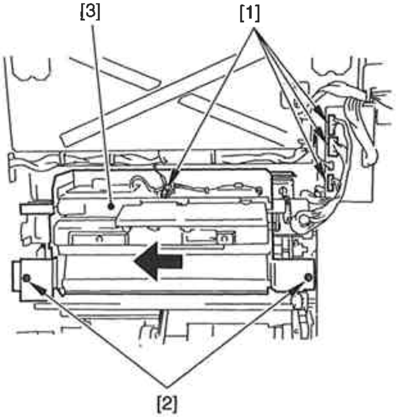


Figure 4-303C

3. Removing the Multifeeder Assembly Pick-Up Roller

1) Remove the two screws [1], and remove the multifeeder pick-up roller cover [2].
2) Remove the two E-rings [3] (resin), and remove the two pick-up rollers [4].

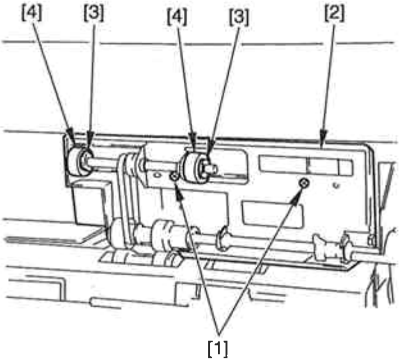


Figure 4-304C

4. Removing the Multifeeder Assembly Feeding Roller/ Separation Roller

1) Remove the multifeeder tray assembly.
2) Remove the three screws [1], and remove the upper guide plate [2] and the lower guide plate [3].

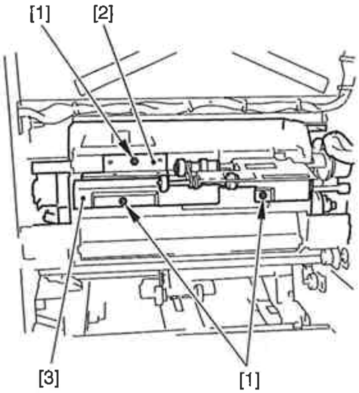


Figure 4-305C

3) Remove the multifeeder assembly pick-up roller.
4) Remove the E-ring [4] and the bushing [5]; then, remove the pick-up roller shaft [6].
5) Remove the E-ring [7] (resin), and remove the feeding roller [8] and the separation roller [9] in sequence.

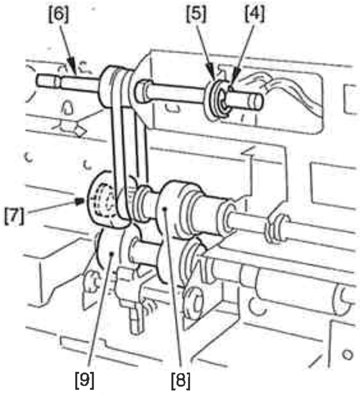


Figure 4-306C

A parallel pin is used in the separation roller. Take care not to drop it.

5. Adjusting the Separation Roller

1) Remove the multifeeder tray assembly.
2) Remove the three screws, and remove the upper guide plate and the lower guide plate.
3) If double-feeding or pick-up faults occur during pick-up operation, adjust the position of the pressure spring [2] of the separation roller [1].
   - If double-feeding occurs, hook the spring on A.
   - If pick-up faults occur, hook the spring on B.

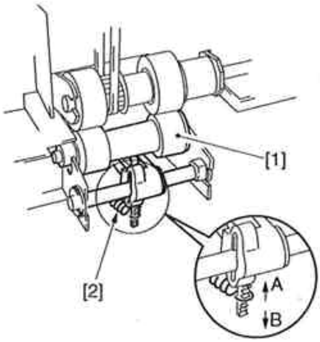


Figure 4-307C

6. Releasing the Lifter

1) Remove the rear right cover.
2) Push down the lifter releasing lever [1] with a screwdriver [2] or the like.

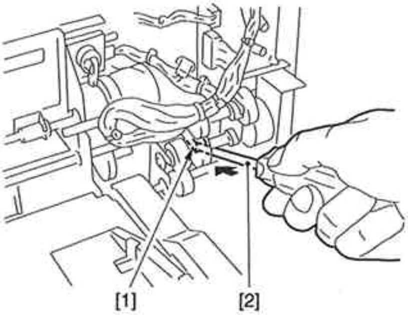


Figure 4-308C (right rear)

D. Duplexing Unit

1. Removing the Duplexing Unit

1) Remove the front right cover.
2) Slide out the duplexing unit.
3) Remove the waste toner cover.
4) Remove the screw [1] (one each) and the left and right stoppers [2]; then, remove the duplexing unit [3].

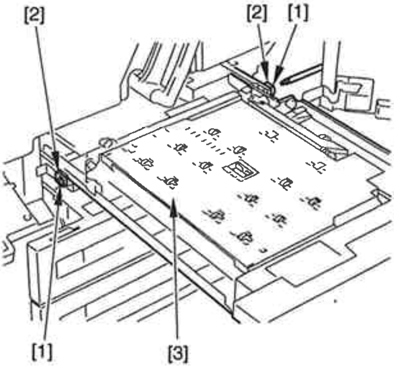


Figure 4-301D

2. Removing the Duplexing Assembly Feeding Roller

1) Remove the duplexing unit.
2) Remove the two grip rings [1], and remove the two paper feeding rollers [3] from the paper feeding roller shaft [2].

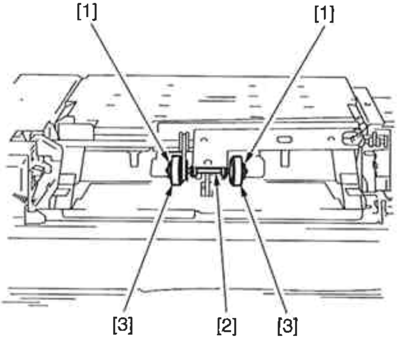


Figure 4-302D

E. Pre-Fixing Feeding Assembly

1. Removing the Pre-Fixing Feeding Assembly

1) Remove the left cover.
2) Slide out the fixing unit and the transfer unit.
3) Remove the two screws [1].

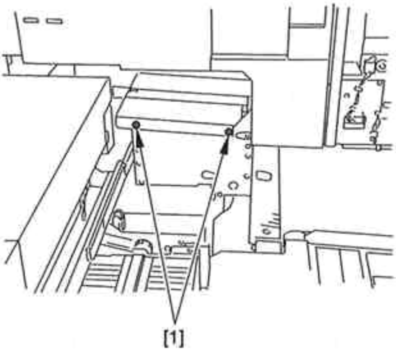


Figure 4-301E

4) Disconnect the two connectors [2], and shift the pre-fixing feeding assembly [3] to the front and slide it out from the delivery side.

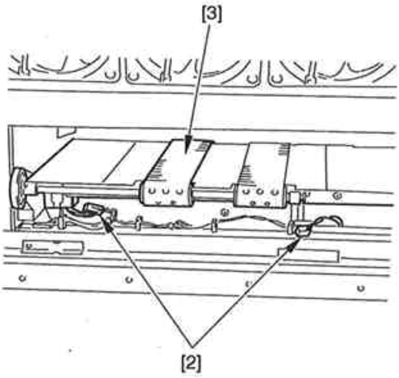


Figure 4-302E

F. Pre-Duplexing Feeding Assembly

1. Removing the Pre-Duplexing Feeding Assembly

1) Open the front cover, and release the pre-duplexing feeding assembly.
2) Remove the two screws [1], and remove the grip [2] and the plate [3] from the pre-duplexing feeding assembly.

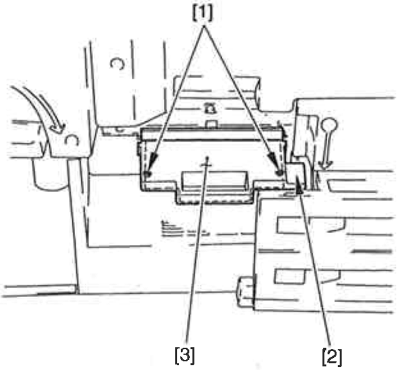


Figure 4-301F

3) Lower the duplexing feeding assembly lifter plate [4], and hook it on the cut-off [5].

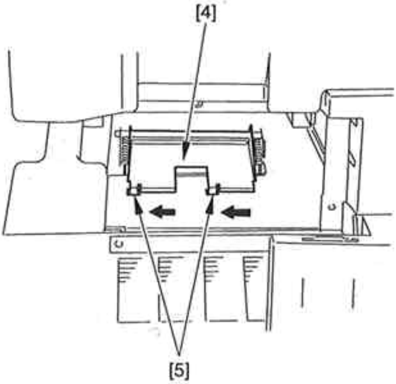


Figure 4-302F

4) Slide out the duplexing unit, and remove the screw [6].

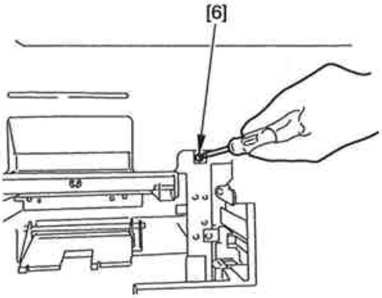


Figure 4-303F

5) Slide out the transfer belt unit, and remove the screw [7].

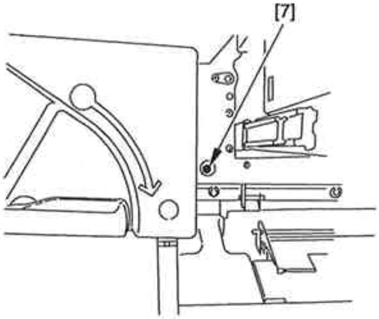


Figure 4-304F

6) Remove the pre-fixing feeding assembly.
7) Disconnect the connector [8], and remove the connector support plate [10].

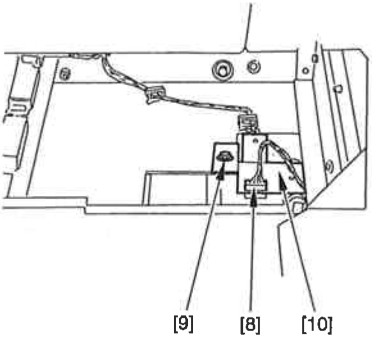


Figure 4-305F

8) Move the pre-fixing feeding assembly to the front; then, slide it to the delivery side to remove.

G. Delivery/Reversing Assembly

1. Removing the Delivery/Reversing Assembly

1) Open the front cover (left), and remove the left cover.
2) Slide out the fixing unit.
3) Loosen the two screws [1].

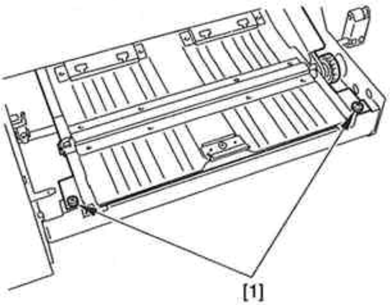


Figure 4-301G

4) Remove the four screws [2], and open the external and internal delivery units; then, disconnect the two connectors [3], and pull out the delivery/reversing assembly [4] to the left side.

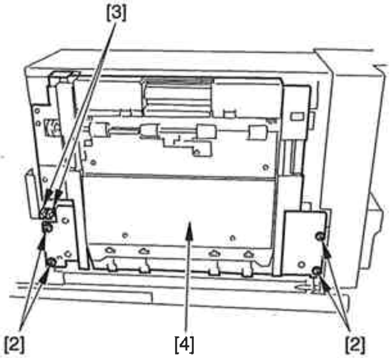


Figure 4-302G

2. Removing the Fixing Separation Claw

1) Open the front cover (left), and slide out the fixing unit; then, open the external and internal delivery units.
2) Remove the screw [1], and remove the delivery sensor assembly [2].

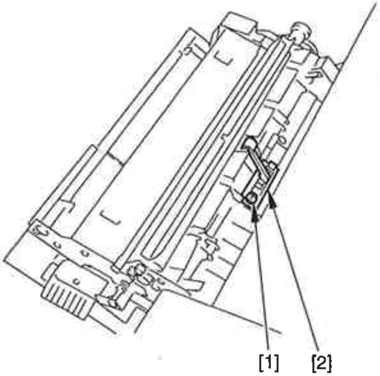


Figure 4-303G

3) Remove the screw [3], and remove the positioning pin [4] of the separation claw unit, and remove the separation claw unit [5].

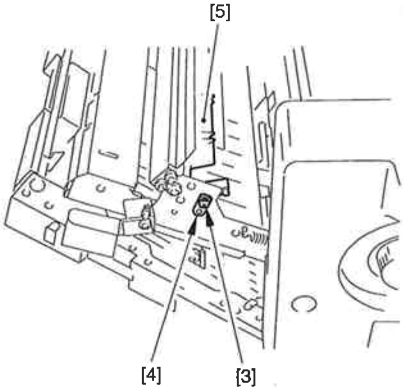


Figure 4-304G

4) Remove the spring [5], and remove the separation claw [6].

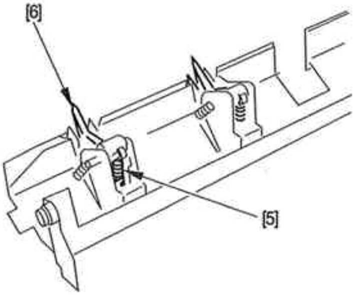


Figure 4-305G

IV. TRANSFER UNIT

A. Transfer Unit

1a. Removing the Transfer Blade

1) Open the front cover, and slide out the transfer unit to the front.
2) Remove the two screws [1], and remove the pre-transfer cover [2].

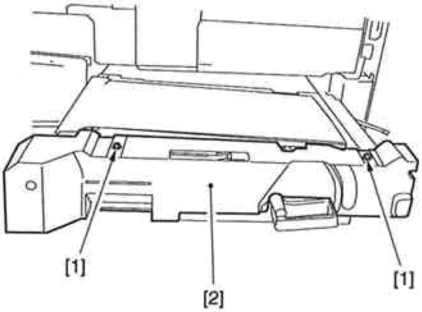


Figure 4-401A

3) While pulling the lever [3] on the bottom of the transfer unit toward the front, set the transfer releasing lever [4].

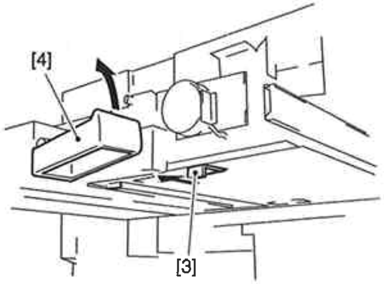


Figure 4-402A

4) Turn the cam [5] by hand so that the belt unit [6] is in up position.

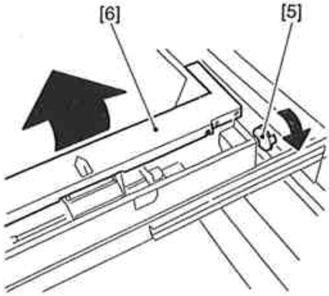


Figure 4-403A

5) Turn the knob [7] clockwise halfway, and pull out the transfer blade assembly [8].

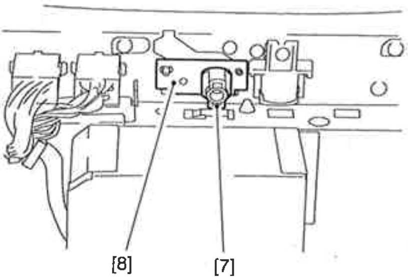


Figure 4-404A

6) Turn the knob [7] counterclockwise halfway to unlock, and remove the two screws [9], and remove the transfer blade [10].

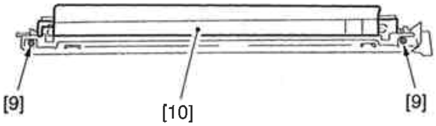


Figure 4-405Aa

1b. Cleaning the Transfer Blade

1) After removing the transfer blade as in step 5), stand the transfer blade assembly [1] on its end as shown in Figure 4-405Ab; then, wipe the blade [2] and the plastic film [3] with lint-free paper with bottom-to-top motions or clean it with a blower brush.

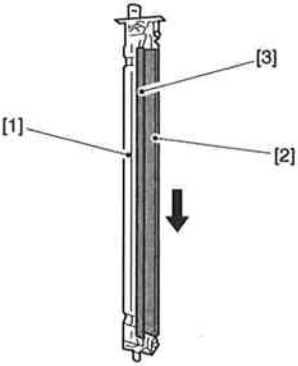


Figure 4-405Ab

2. Opening the Transfer Belt Assembly

1) Remove the hopper left cover and the separation charging assembly, and install the transfer frame metal fixing [1] to the front side plate.

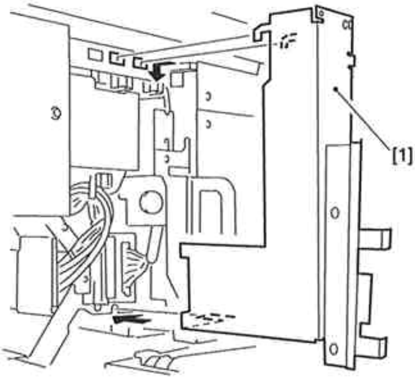


Figure 4-406A

2) Remove the two screws, and remove the pre-transfer cover.

3) While pulling the lever [3] toward the front, set the transfer releasing lever [4].

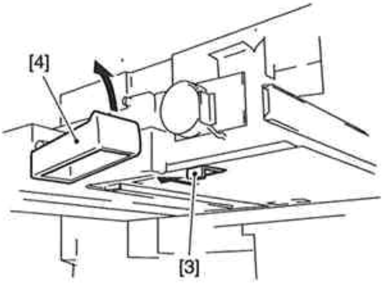


Figure 4-407A

4) Turn the cam [5] by hand so that the belt unit [6] is in up position.

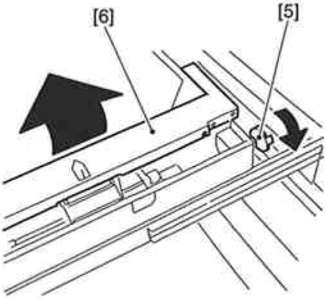


Figure 4-408A

5) Disconnect the two connectors [9], and loosen the screw [10]; then, shift the locking plate [11] to the left.

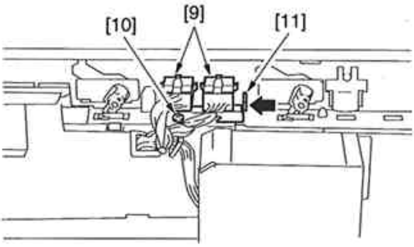


Figure 4-409A

6) Release the separation guide [12].

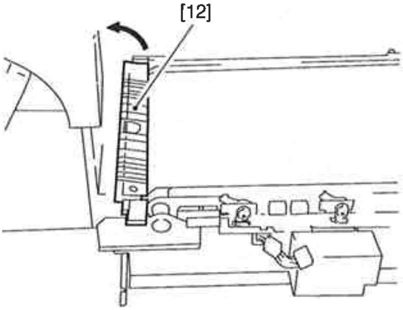


Figure 4-410A

7) Hold as shown in Figure 4-411A, and open the transfer belt assembly [13].

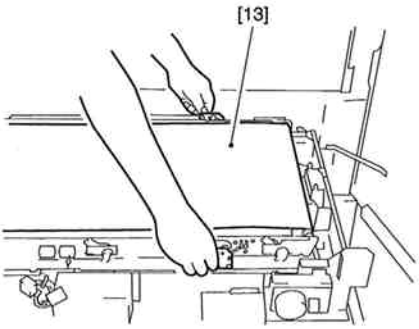


Figure 4-411A

8) Fit the pin [14] on the transfer frame metal fixing [1] into the hole [15] in the transfer belt assembly [13] by lifting the transfer belt assembly [13] slightly.
At this time, make sure that the transfer belt assembly [13] is securely in the slit [16] in the pin [14].

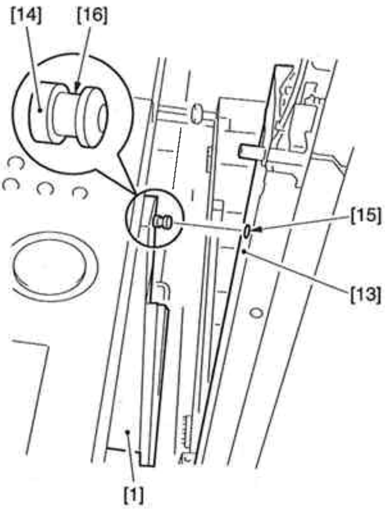


Figure 4-412A

3. Removing the Transfer Belt

a. Without Removing the Transfer Unit from the Copier

1) Slide out the transfer unit assembly to the front, and remove the transfer front cover.
2) Shift up the separation paper guide [1], and move it to the rear to remove.

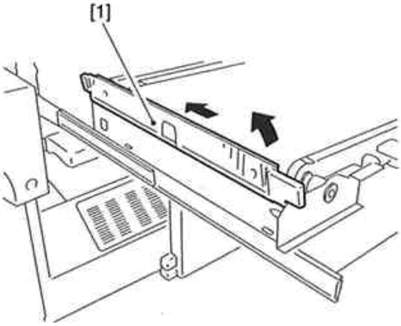


Figure 4-413A

3) Remove the three screws [2], and remove the grounding roller unit [3].

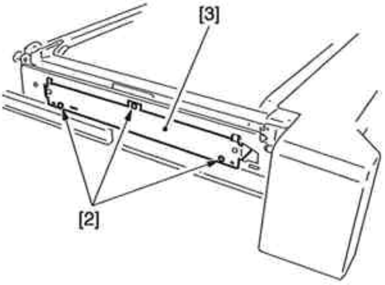


Figure 4-414Aa

4) Open the transfer belt assembly. (See the instructions on how to open the transfer belt assembly.)
5) Loosen the mounting screw [5], and free the sensor unit fixing plate [4].

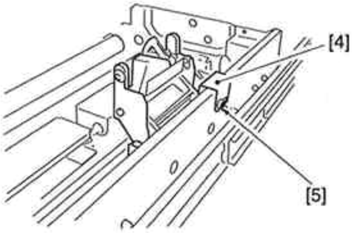


Figure 4-414Ab

6) Push down the sensor unit [6], and butt the sensor unit fixing plate [4] in the direction of the arrow; then, tighten the screw [5], and fix the sensor unit [6] and the sensor unit fixing plate [4] in place.

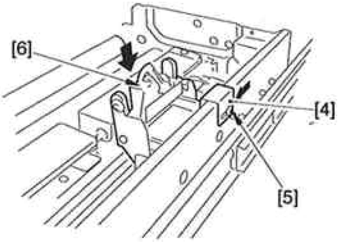


Figure 4-414Ac

7) Remove the screw [7], and remove the transfer inlet paper guide [8].

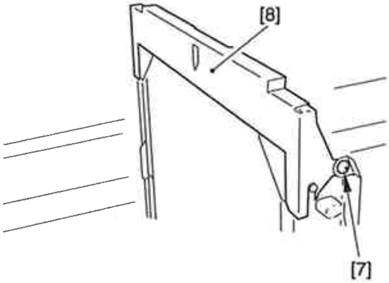


Figure 4-415A

8) Remove the three screws [9], and remove the transfer frame front support plate [10].

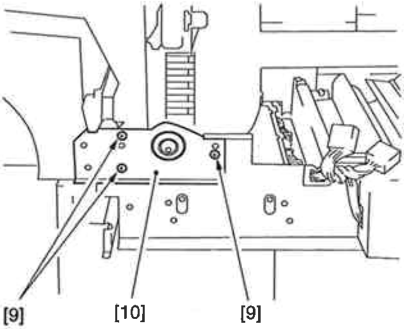


Figure 4-416A

9) Push in the transfer unit assembly [11] toward the rear until it hits the rear lightly; at this time, take care not to force it farther than it moves.

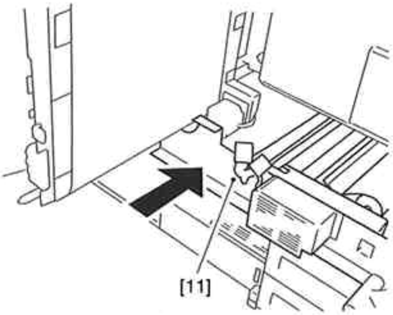


Figure 4-417A

10) To protect the transfer belt [12], place A3 paper [13] as shown.

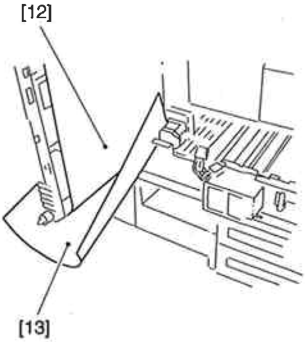


Figure 4-418A

11) Remove the screw [14], and pull out the metal fixing [15] at the front.

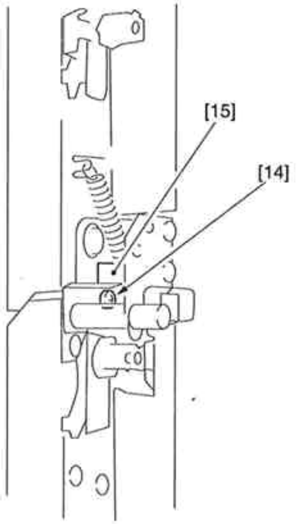


Figure 4-419A

12) Loosen the screw [16], and while pulling the rear releasing lever [17] in the direction of the arrow, bend the link roller assembly [18].

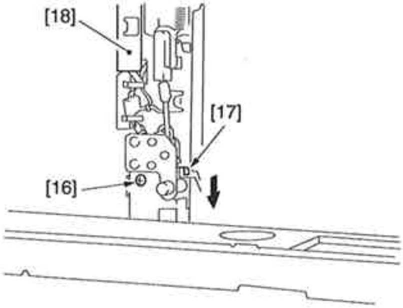


Figure 4-420A (rear)

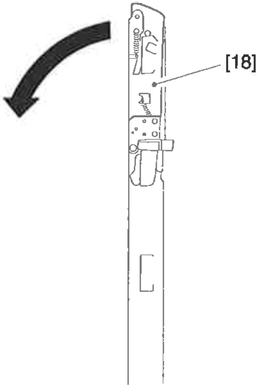


Figure 4-421A

13) Pull out the transfer belt [12] to the front.

b. By Removing the Transfer Unit from the Copier

1) Remove the transfer belt assembly. (See 5. "Removing the Transfer Belt Assembly.")
2) Place the transfer belt assembly as shown, and loosen the fixing screw [1] on the rear releasing lever.

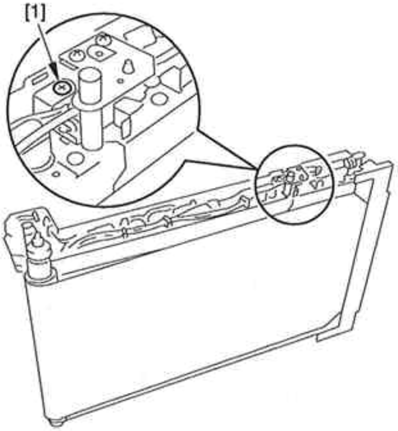


Figure 4-422A

3) Move and place the transfer belt assembly as shown, and remove the mounting screw [3]; then, remove the transfer belt assembly inlet plate [2].

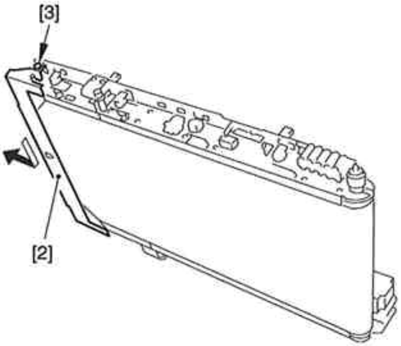


Figure 4-423A

4) Remove the mounting screw [5], and release the metal fixing (front) [4].

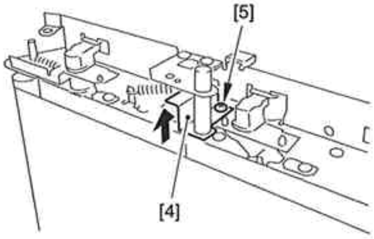


Figure 4-424A

5) Release the rear releasing lever [6].

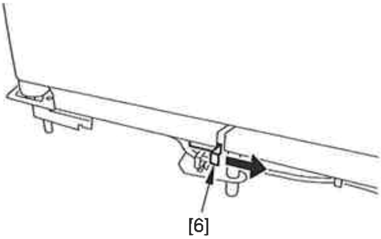


Figure 4-425A

6) Bend the link roller assembly [7] in the direction indicated, and detach the belt [8].

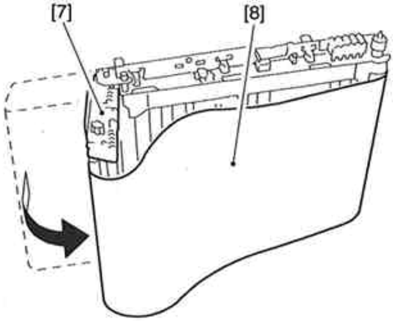


Figure 4-426A

4. Installing the Transfer Belt

1) As a rule, install the transfer belt by reversing the steps used to remove it with the following in mind:
2) After installing the transfer belt, turn the drive roller [1] of the transfer belt (four to five lengths) to move the transfer belt [2] over a short distance.

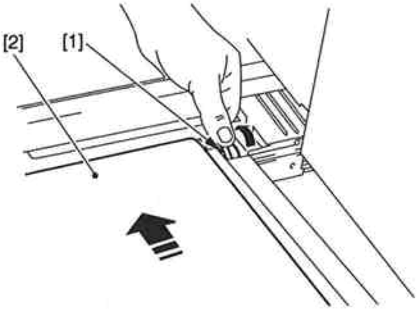


Figure 4-427A

1. The transfer belt has its own orientation. Make sure that the seam detecting sticker (over the seam on the back of the transfer belt) is toward the rear.
2. If the transfer belt is soiled, wipe it with a moist cloth or with lint-free paper moistened with alcohol. (Be sure that the belt is completely dry before installing it back to the machine.)
3. Avoid touching the surface (especially the area coming into contact with copy paper).
4. If you have removed or replaced the transfer belt, execute 'FUNC > F-MISCp > E075-RLS' in service mode to initialize the transfer belt swing data.

5. Check to make sure that the bearing [10] is securely in place on the transfer frame support plate [9] when installing the transfer unit.

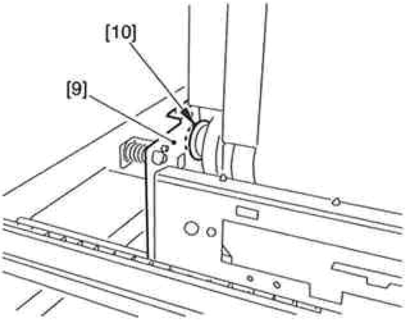


Figure 4-427A

6. After installing the transfer belt, check to make sure that the transfer belt is not in contact with the lever of the transfer belt end sensor.

5. Removing the Transfer Belt Swing Motor (M13)

1) Slide out the transfer unit assembly toward the front, and open the transfer belt assembly (See chapter 4. IV. Transfer Unit, A-2. Opening the Transfer Belt Assembly).
2) Remove the screw [1], and disconnect the connector [2]; then, remove the belt swing motor [3].
3) Remove the screw [1], and disconnect the connector [2]; then, remove the belt swing motor [3].

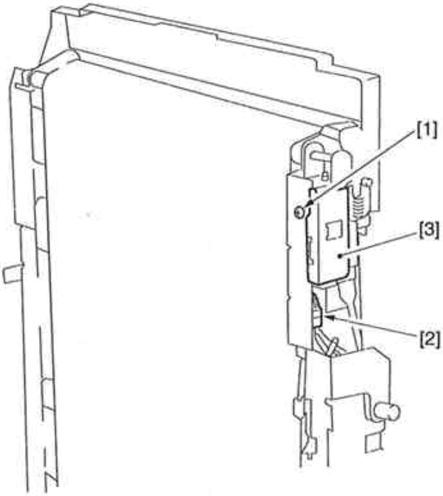


Figure 4-429A

> If you have removed or replaced the transfer belt motor, be sure to initialize the transfer belt drive data using 'FUNC > F-MISCp > E075-RLS'. (See chapter 7. Initializing the Transfer Belt Swing Control Data.)

6. Removing the Transfer Belt Assembly

1) Open the front cover, and slide out the transfer unit assembly to the front.
2) Open the transfer belt assembly (See chapter 4. IV. Transfer Unit, A-2. Opening the Transfer Belt Assembly).
3) Remove the three screws [3], and remove the transfer frame front support plate [4].

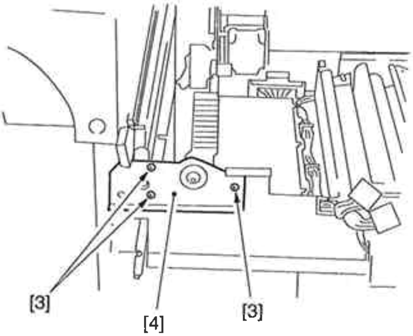


Figure 4-430A

4) Remove the transfer belt assembly [5] by moving it in the direction of the arrow.

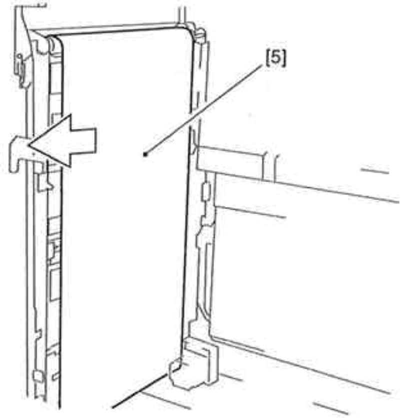


Figure 4-431A

7. Removing the Transfer Belt Motor (M14)

1) Slide out the transfer unit assembly toward the front, and open the transfer belt assembly (See chapter 4. IV. Transfer Unit, A-2. Opening the Transfer Belt Assembly).
2) Disconnect the connector [1], and remove the three screws [2] and the adjusting screw [3]; then, remove the transfer belt motor [4].

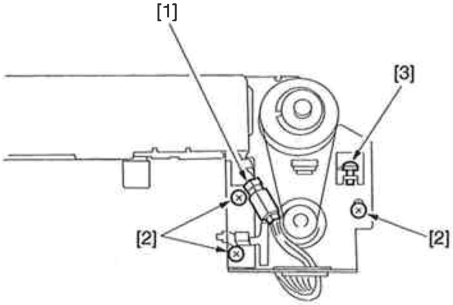


Figure 4-432A

8. Installing the Transfer Belt Motor

1) Install the transfer belt using the steps used to remove it but only in reverse.
2) Install it so that the gap of the adjusting screw [1] is 3.5 ±0.3 mm.

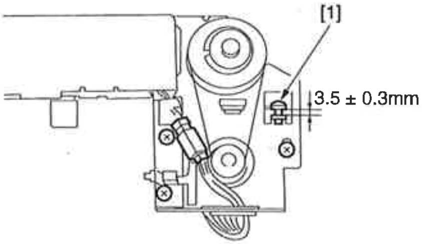


Figure 4-433A

9. Removing the Internal Static Eliminating Roller

1) Slide out the transfer unit assembly to the front.
2) Remove the transfer front cover (See chapter 4. IV. Transfer Unit, A-1a. Removing the Transfer Blade).
3) Set the transfer releasing lever.
4) Remove the two screws [2], and remove the transfer rear cover [1].

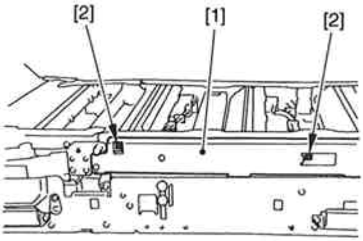


Figure 4-434A

5) Disconnect the connector [3].

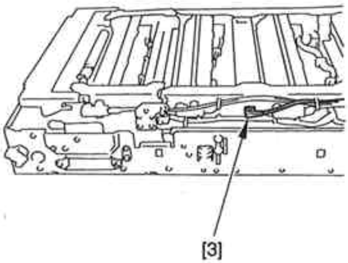


Figure 4-435A

⚠ When installing the internal static eliminating roller, check to make sure that the connector [3] is securely connected.

6) Remove the screw [4], and slide out the internal static eliminating roller [5] by lifting it.

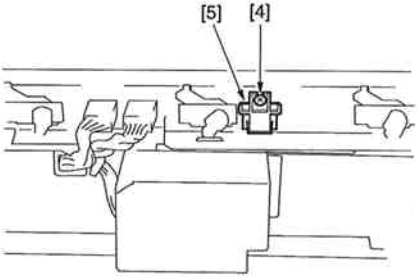


Figure 4-436A

10. Removing the Grounding Roller

1) Draw out the transfer unit.
2) Remove the three screws [1], and remove the grounding roller unit [2].

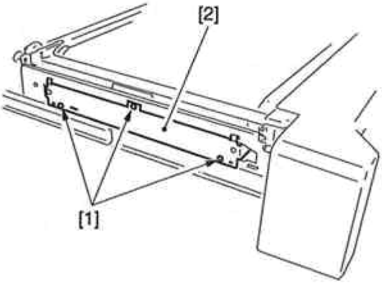


Figure 4-437A

3) Remove the mounting screw [4], and remove the roller fixing plate [3]; then, remove the grounding roller [5].

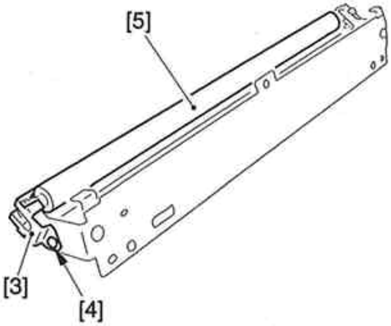


Figure 4-438A

11. Cleaning the Grounding Roller

1) Remove the three screws, and remove the grounding roller unit.
2) Clean the toner off the surface of the roller with a blower brush, and dry wipe the roller with lint-free paper.

12. Cleaning the Transfer Belt Seam Detecting Sticker

1) Release the separation paper guide.
2) Turn the transfer belt drive roller [1] to move the transfer belt [2] until the seam [3] is at the top (as shown).

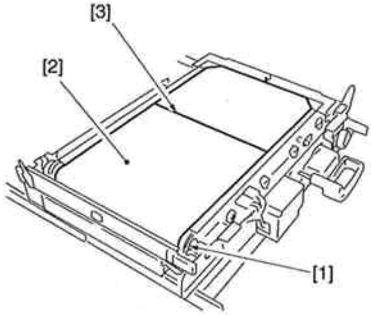


Figure 4-439A

3) Wipe the transfer belt seam detecting sticker [4] attached to the back of the transfer belt with lint-free paper moistened with alcohol two to three times.
After work, check to make sure that the transfer belt is not in contact with the end sensor belt.

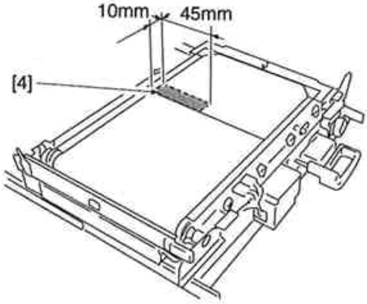


Figure 4-440A

4) Execute ‘FUNC > F-MISCP > E075-RLS’ in service mode to initialize the transfer belt swing data. (See chapter 7. Initializing the Transfer Belt Swing Control Data.)

13. Cleaning the Transfer Belt Home Position Sensor

1) Remove the transfer belt.
2) Dry wipe the light-emitting and -receiving faces of the transfer belt home position sensor [1] with lint-free paper.

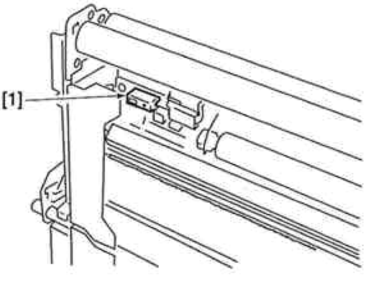


Figure 4-441A

3) After installing the belt, execute ‘FUNC > F-MISCp > E075-RLS’ in service mode to initialize the transfer belt swing data.

B. Transfer Belt Mount

1. Removing the Transfer Cleaning Blade

1) Remove the two screws [1], and remove the cleaning blade [2].

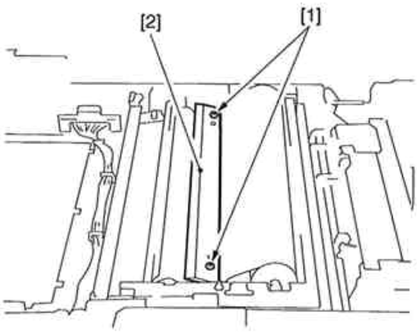


Figure 4-401B

2. When Replacing the Transfer Cleaning Blade

1) Remove the transfer cleaning blade.
2) Wrap lint-free paper moistened with lubricant arounf a finger, and lightly rub it along the edge three times in the direction of the arrow (same direction).

1. When rubbing the lint-free paper, make sure that the same area of the lint-free paper is in contact with the blade for all three strokes.
2. Do not force the lint-free paper along the edge.

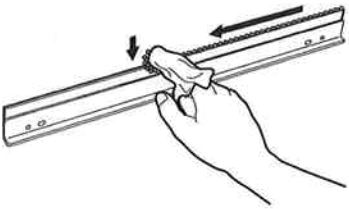


Figure 4-402B

3. Removing the Transfer Cleaning Web

1) Disconnect the two connectors [1]; then, while pushing down the pressure arm [2], remove the web assembly [3] by lifting it.

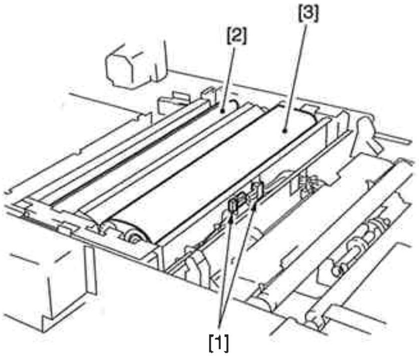


Figure 4-403B

2) Remove the E-ring [4] (resin), and remove the cleaning blade support shaft [5].
3) Remove the web fixing bushing [6], and remove the transfer cleaning web.

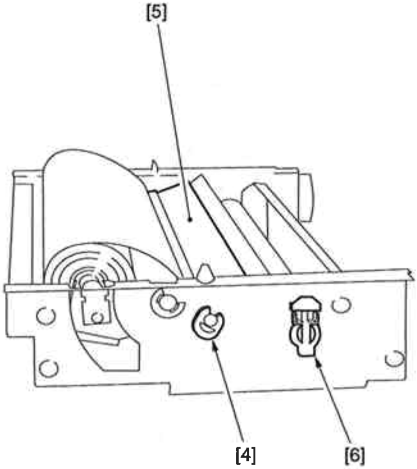


Figure 4-404B

4. Removing the Oil Removing Roller

1) Remove the mounting screw [2], and remove the metal fixing [1] and the bushing [3]; then, remove the oil removing roller [4].

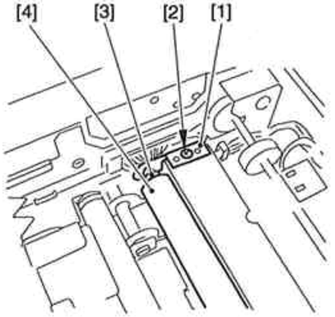


Figure 4-405B

5. Removing the Polishing Roller

1) Remove the screw [1] and the metal fixing [2]; then, remove the polishing roller [3].

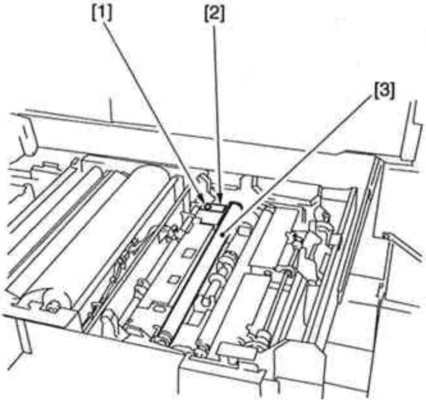


Figure 4-406B

C. Replacing the Separation Paper Guide Static Eliminating Wire

1) Shift up the separation paper guide [1], and move it to the rear to remove.

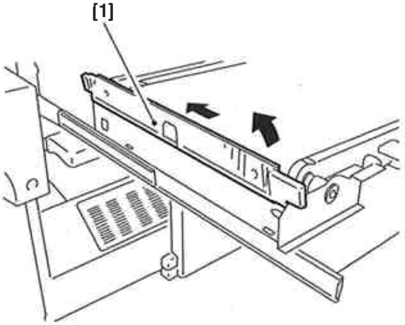


Figure 4-401C

2) Remove the screw [2], and remove the guide plate [3].

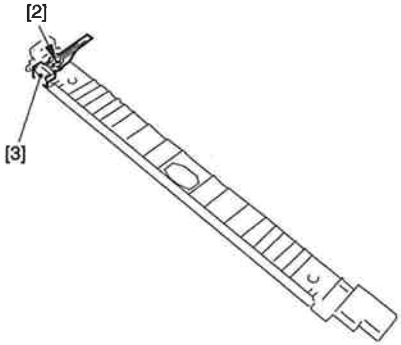


Figure 4-402C

3) Remove the spring [4], and replace the wire [5]. Make sure that the wire is under the protrusions of the ribs.

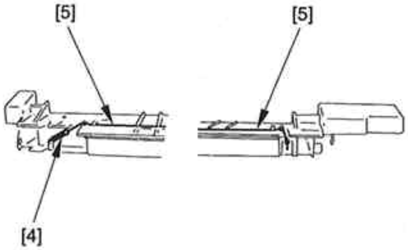


Figure 4-403C

V. EXPOSURE SYSTEM

A. Original Exposure System

1. Removing the Scanning Lamp

1) Disconnect the power plug.
2) Remove the copyboard glass.
3) Remove the three screws [1], and remove the reflection-proofing plate [2].

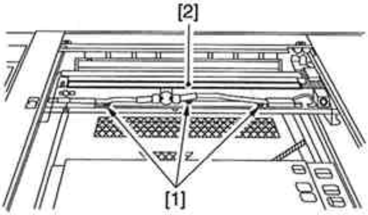


Figure 4-501A

4) Turn a flat-blade screwdriver in the direction of arrow [3] to open the electrode plate in the direction of arrow [4], thereby removing the scanning lamp.

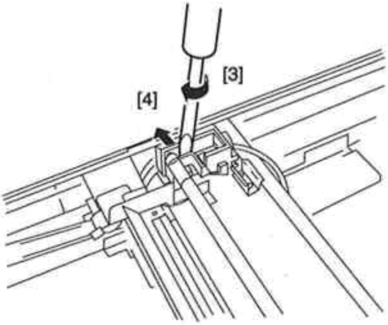


Figure 4-502A

1. Do not work until the surface of the scanning lamp has cooled.
2. Do not leave fingerprints on the scanning lamp.
3. If the surface of the scanning lamp is soiled, dry-wipe it.

2. Orientation of the Scanning Lamp

Install the scanning lamp so that the boss [1] in the middle of the lamp is in the direction of the arrow; for the longer side, make sure that the logo mark is toward the rear.

When handling the lamp, do not touch the lamp portion.

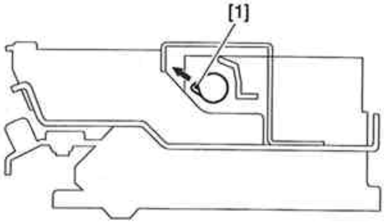


Figure 4-503A

3. Removing the Standard White Plate

1) Turn the power switch OFF.
2) Remove the two screws [1], and remove the vertical size plate [2].

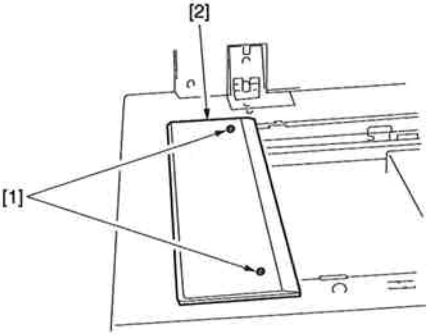


Figure 4-504A

3) Remove the two screws [3], and remove the standard white plate [4].

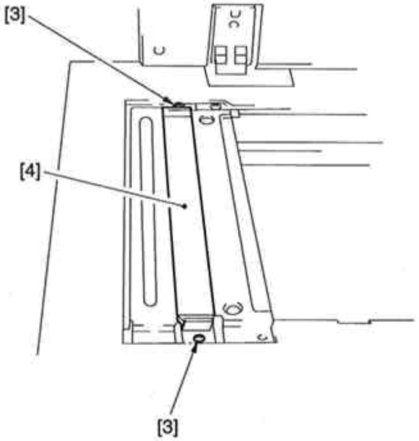


Figure 4-505A

4. Removing the Lens Mount Cover, CCD Cover, and CCD Unit

1) Disconnect the power plug.
2) Remove the copyboard glass.
3) Remove the four screws [1], and remove the lens mount cover.

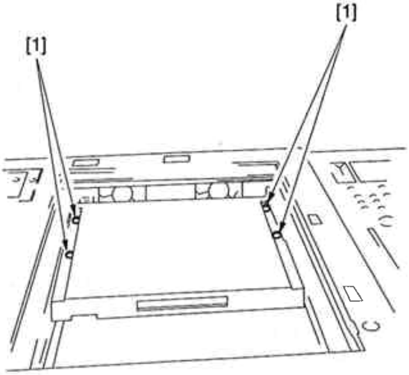


Figure 4-506A

4) Remove the CCD cover [2].

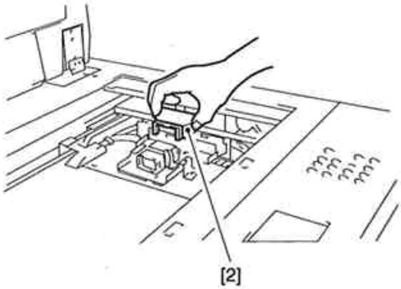


Figure 4-507A

5) Remove the two screws [3], and remove the two CCD unit retaining springs [4].

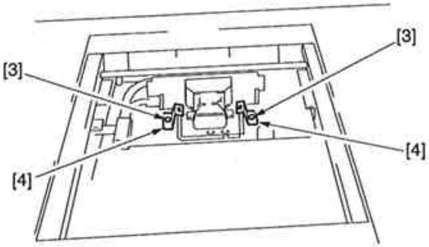


Figure 4-508A

6) Lift the CCD unit, and disconnect the two connectors (J2001 [5] /J2003 [6]); then, remove the grounding wire mounting screw [7], and remove the CCD unit.

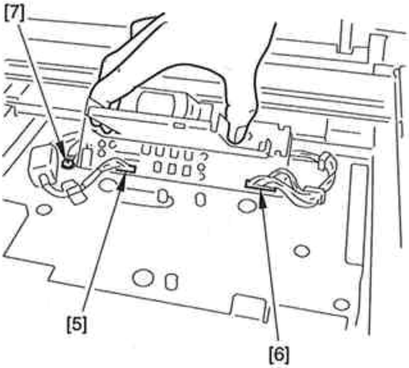


Figure 4-509A

5. Removing the Scanner Cover

1) Disconnect the power plug.
2) Remove the copyboard glass.
3) Remove the four screws [1], and remove the scanner cover.

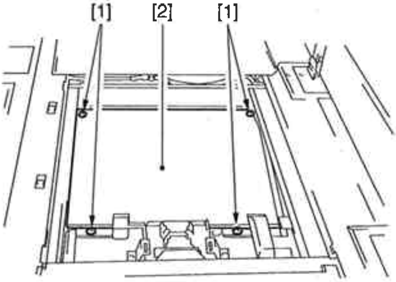


Figure 4-510A

---

1. Move the mirror mount fully to the left.
2. Take care not to damage the power wire [3] of the scanning lamp.

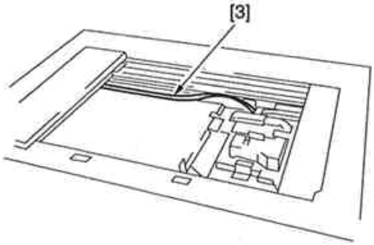


Figure 4-511A

3. Pay attention to the bend at the front.

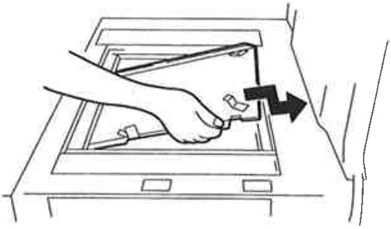


Figure 4-512A

B. Pre-Exposure System

1. Removing the Pre-Exposure System

1) Open the front cover, and slide out the process unit.
2) Keep the transfer unit out.
3) Remove the developing assembly/cleaning unit and the photosensitive drum that corresponds to the pre-exposure lamp to be removed.
4) Cover the other developing assemblies/cleaning units and photosensitive drums with paper.
5) Remove the screw [1], and disconnect the two connectors [3]; then, pull out the primary charging assembly rail 3 to the front.
   At this time, take care not to drop the primary charging assembly rail.

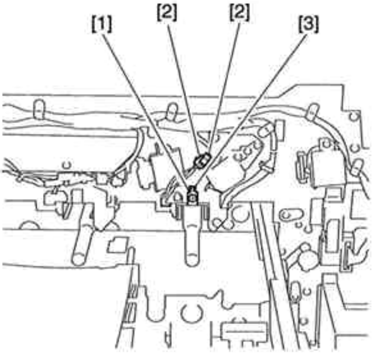


Figure 4-501B

6) Remove the screw, and slide out the pre-exposure lamp PCB.

Tighten the screw while butting the rail against the front side plate.

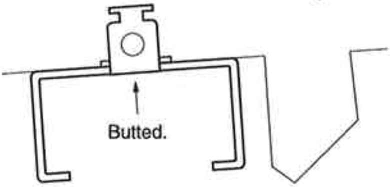


Figure 4-502B

VI. LASER SYSTEM

A. Laser Unit

1. Making Preparations for Laser Unit-Related Parts

1) Remove the glass retainer right, upper rear right cover, and digital covers 1, 2, 3, and 4.
2) Remove the two fixing screws [2] of the digital unit [1]; then, lift it in the direction of the arrow and fix it in position as shown in Figure 4-601A.

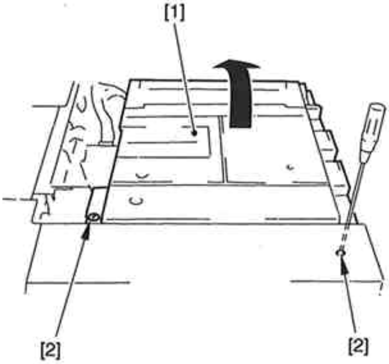


Figure 4-601A (fixing screw)

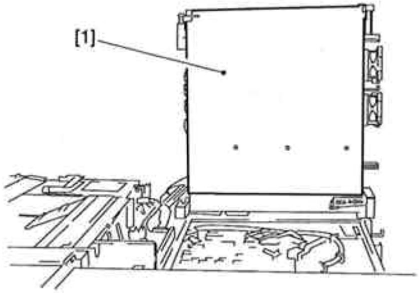


Figure 4-602A (fixing position)

3) Remove the two screws [3], and remove the analog processor PCB [4]; then, fix it in place in the hooking hole [5] with a screw [6].

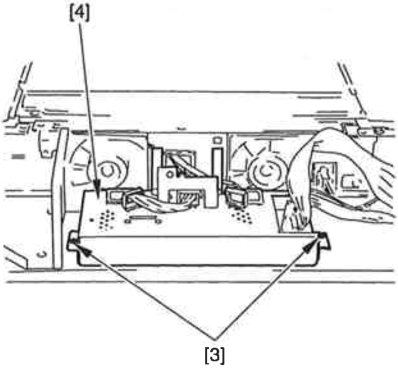


Figure 4-603A

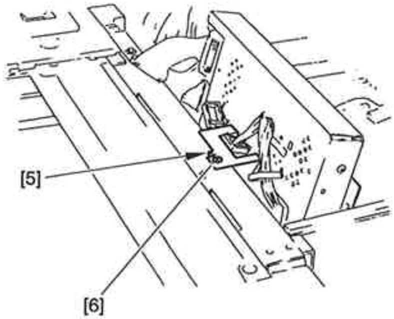


Figure 4-604A

4) Remove the three screws [7], and remove the duct plate [8].

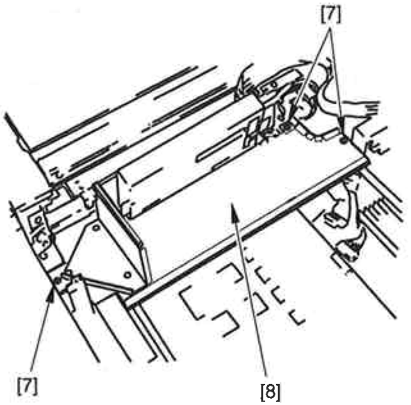


Figure 4-605A

5) Disconnect all connectors on the video controller PCB [9], and remove the nine screws [10]; then, remove the video controller PCB together with its support plate.

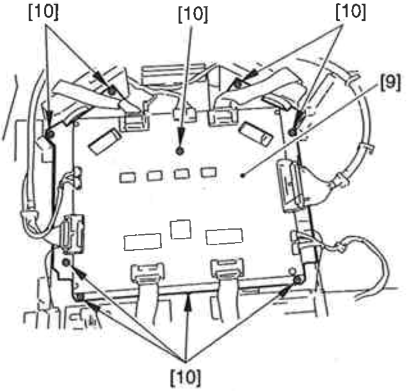


Figure 4-606A

2. Removing the Laser Unit

1) Make preparations for parts associated with the laser unit.
2) Disconnect the connector [1], and remove the two screws [2] (w/ hex hole); then, remove the laser unit [3].

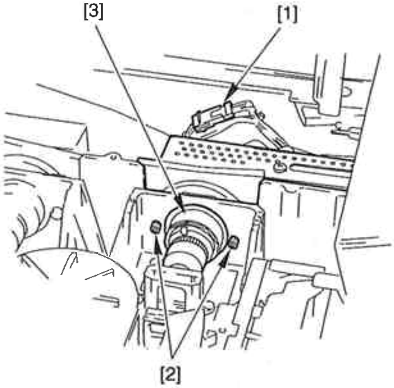


Figure 4-607A

3. Points to Note When Installing the Laser Unit

When installing the laser unit to the laser mount at the factory, focus adjustment is performed and the adjustment value is recorded in the label attached to the laser mount.

If you have replaced the laser unit in the field, be sure to perform focus adjustment by turning the lens assembly of the laser unit (8-notch scale) according to the recorded value.

- **Performing Focus Adjustment**

1) Using two screws [2] (w/hex hole), install the laser unit to the laser mount.

2) Check to make sure that the marking [1] on the lens assembly matches the marking [2] on the lens mount (standard position).

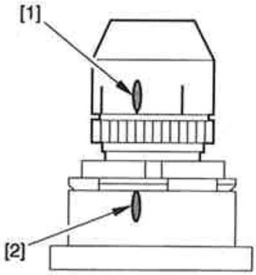


Figure 4-608A

If the unit is not in standard position, loosen the locking nut [3], and turn the lens assembly until the distance to the end [4] of the lens assembly is 27.3 ±0.2 mm, i.e., where the markings match.

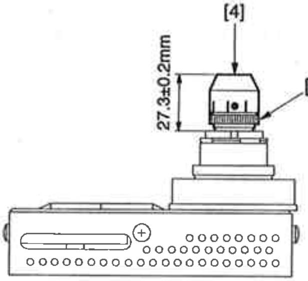


Figure 4-609A

3) Perform focusing adjustments by turning the lens assembly once again according to the values recorded on the label. For instance, if the value is "+2/8," turn the lens assembly in the positive direction (counterclockwise when viewing from the end of the lens assembly) over two notches.

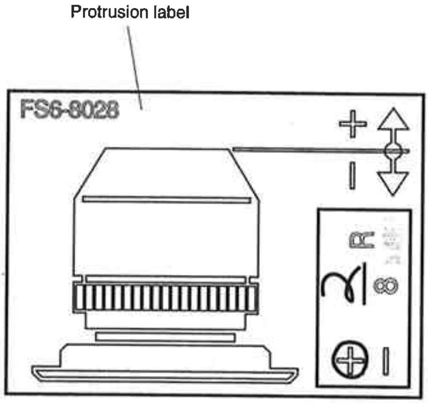


Figure 4-610A

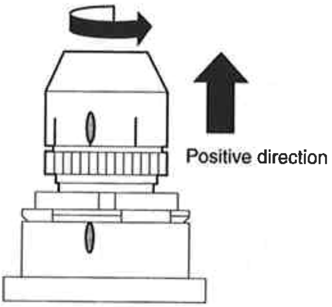


Figure 4-611A

5) Tighten the locking nut [3], and fix the position of the lens in place.

4. Removing the Lens Scanner Motor (M4)

1) Make preparations for parts associated with the laser unit.
2) Disconnect the two connectors (J03 and J04) on the laser scanner motor driver PCB; then, remove the three screws [2] (M4) on the laser scanner motor assembly.

Do not remove the M3 screw used to keep the cover in place.

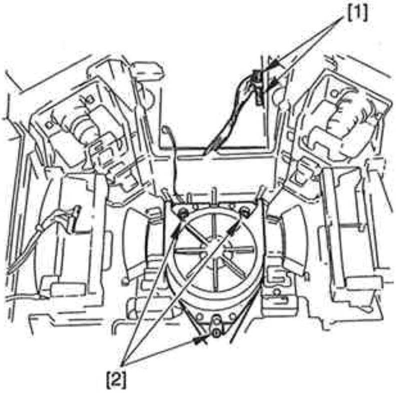


Figure 4-612A

3) Feed the harness [3] of the connector removed in step 2) under the laser scanner motor.
4) Lift the laser scanner motor [4], and disconnect the two connectors [5]; at this time, work paying attention to the dust-proofing glass of the motor assembly and the lens found on the left and the right of the motor.

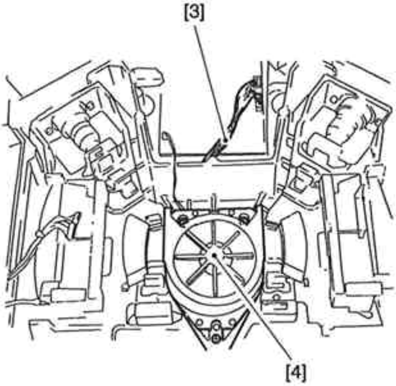


Figure 4-613A

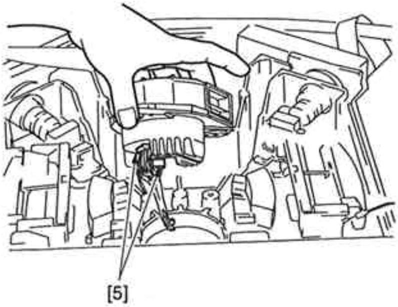


Figure 4-614A

B. Image Position Correcting Mirror Unit

1. Removing the Y Image Position Correcting Mirror Unit

1) Make preparations for parts associated with the laser unit (See chapter 4. VI. LASER SYSTEM, A-1. Making Preparation for Laser Unit-Related Parts).
2) Remove the two cable mounting screws [1] and the cable clamp [2]; then, remove the two cover mounting screws [3], and remove the image position correcting mirror cover (right) [4].

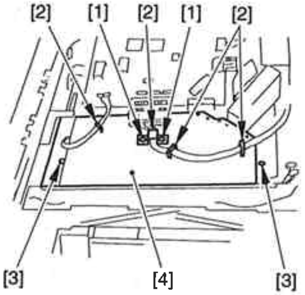


Figure 4-601B

3) Disconnect the two connectors [5], and remove the five screws [6]; then, remove the Y image position correcting mirror unit [7]. (Take care not to drop the washers from the screws.)

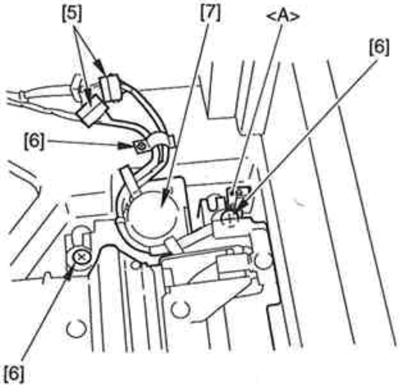


Figure 4-602B (rear)

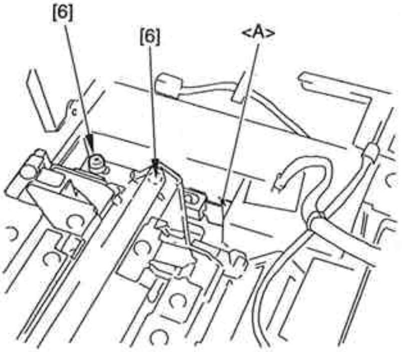


Figure 4-603B (front)

Never remove the screw <A> used to keep the butting plate of the image position correction mirror unit in place. Otherwise, the position of the mirror unit will be lost.

2. Points to Note When Installing the Y Image Correcting Mirror Unit

Butt the Y image position correcting mirror assembly [1] against the butting plate [2] to fix it in position.

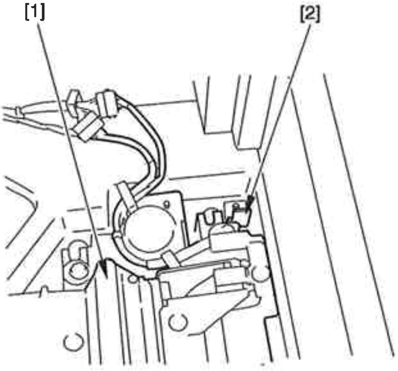


Figure 4-604B (rear)

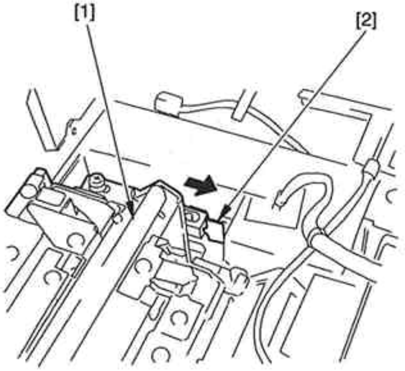


Figure 4-605B (front)

3. Removing and Installing the Motors for the Y Image Correcting Mirror

- **Removing the Tilt Correcting Motor (M2)**

1) Remove the Y image position correcting mirror unit.
2) Remove the two screws [1], and remove the motor [2].

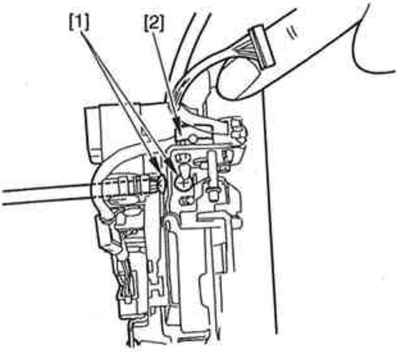


Figure 4-606B

- **Removing the Ratio Correcting Motor (M3)**

1) Remove the Y image position correcting mirror unit.
2) Disconnect the connector [1], and remove the spring [2].
3) Remove the two screws [3], and remove the motor [4].

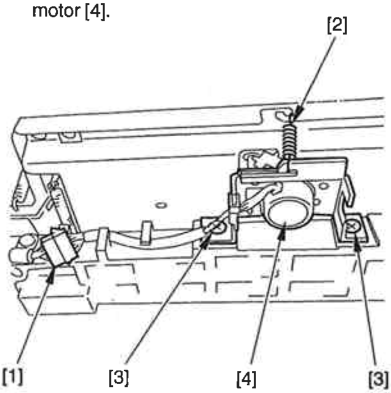


Figure 4-607B

- **Points to Note When Installing the Tilt Correcting Motor**

1) Install the motor [3] with a screw [2] while moving the mirror assembly [1] in the direction of the arrow.
At this time, force the motor in the direction in which the screw is tightened.
2) Fit the screw [4].

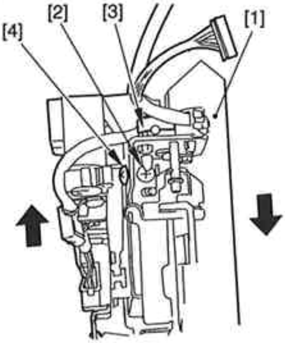


Figure 4-608B

4. Shifting the Scanner Unit

1) Remove the scanner retainer right, upper rear right cover, and digital covers 1, 2, 3, and 4.
2) Keep the digital unit where it should be fixed in place (See chapter 4. VI. LASER SYSTEM, A-1. Making Preparation for Laser Unit-Related Parts).
3) Disconnect the two connectors [1] on the analog processor PCB, and remove the two screws [2]; then, remove the analog processor PCB [3].

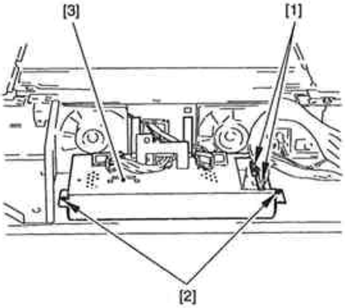


Figure 4-609B

4) Fix the analog processor PCB on the hooking hole [4] with a screw [5].

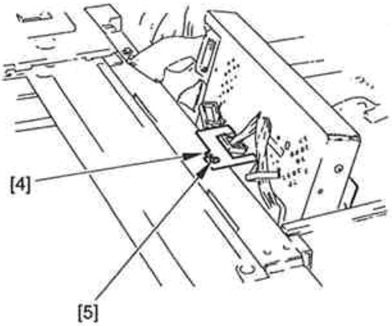


Figure 4-610B

5) Remove the three screws [6], and remove the duct plate [7].

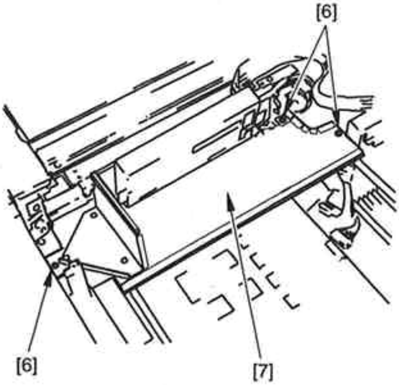


Figure 4-611B

6) Disconnect the three connectors [8].

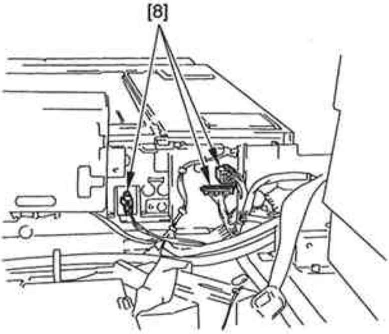


Figure 4-612B

7) Remove the two stepped screws [9].

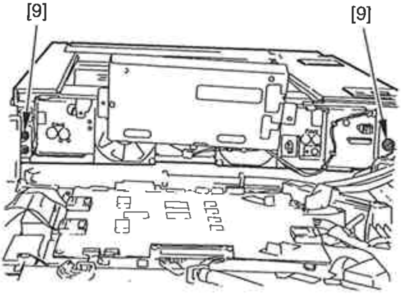


Figure 4-613B

8) Remove the left cover.

9) Remove the two screws [10], and shift the control panel [11] to the front.

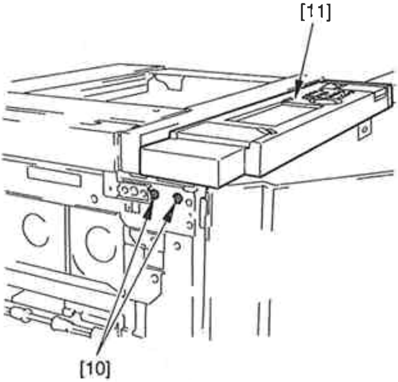


Figure 4-614B

10) Remove the five screws [12].

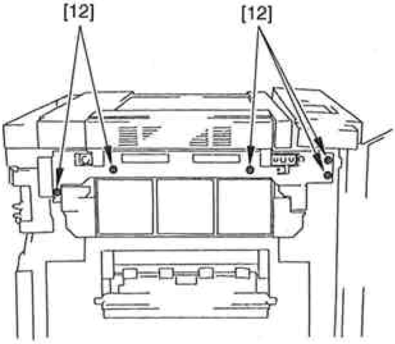


Figure 4-615B

11) Shift the scanner unit to the left.

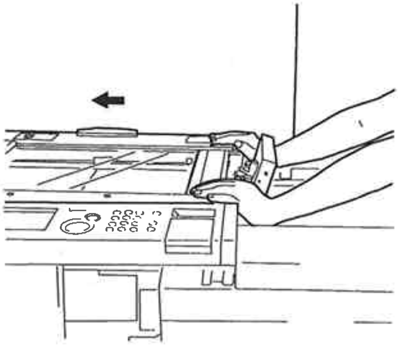


Figure 4-616B

5. Removing the M Image Position Correcting Mirror Unit

1) Make preparations for parts associated with the laser unit (See chapter 4. VI. LASER SYSTEM, A-1. Making Preparation for Laser Unit-Related Parts).
2) Remove the laser cooling fan.
3) Disconnect the three connectors [1], and remove the two screws [2]; then, remove the mirror cover (right) [3].

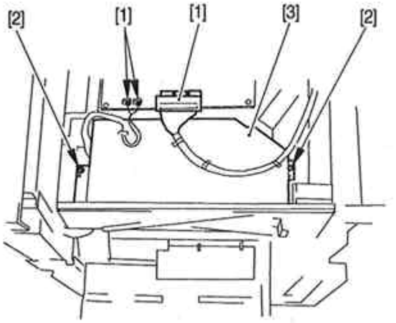


Figure 4-617B

4) As in the case of the Y image position correcting mirror unit, remove the three screws to remove the M image position correcting mirror unit.

6. Removing the C/Bk Image Position Correcting Mirror Unit

1) Shift the scanner unit (See chapter 4. V. EXPOSURE SYSTEM, B-4. Shifting the Scanner Unit).
2) Remove the two screws [1], and remove the image position correcting mirror cover (left) [2].

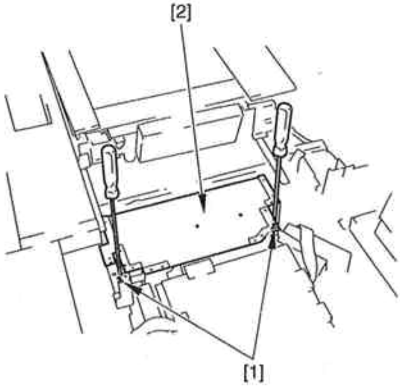


Figure 4-618B

3) Remove each of the image position correcting mirror units (See chapter 4. VI. LASER SYSTEM, B-5. Removing the Y/M Image Position Correcting Mirror Unit).

7. Removing the Dust-Proofing Glass

1) Lift the hopper assembly (See chapter 4. VII. HOPPER SYSTEM, A-1. Removing the Hopper Assembly).
2) Slide the dust-proofing mirror [1] in the direction of the arrow to pull it out to the front.

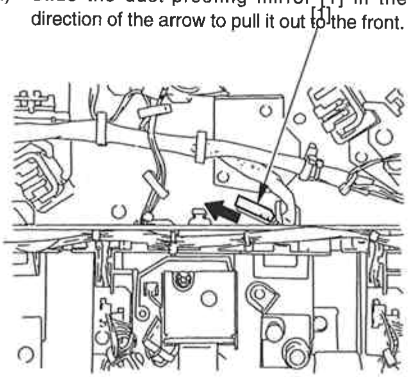


Figure 4-619B

When installing the dust-proofing glass [1], insert it by forcing it in the direction of arrow A; then, push it down in the direction of arrow B to set.

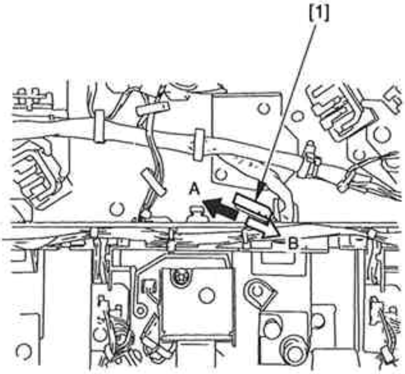


Figure 4-620B

8. Removing the BD Unit

- **C/Bk BD Unit**

1) Remove the primary high-voltage transformer unit.
2) Remove the lamp regulator.
3) Remove the four mounting screws [1], and disconnect the five connectors [2]; then, remove the fan mount [3].

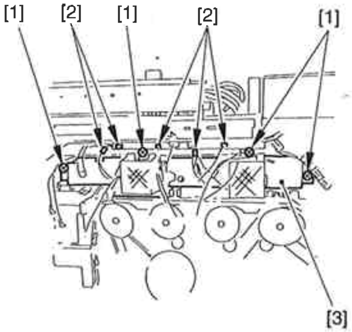


Figure 4-621B

4) Remove the screw [4], and remove the rear unit cover [5].

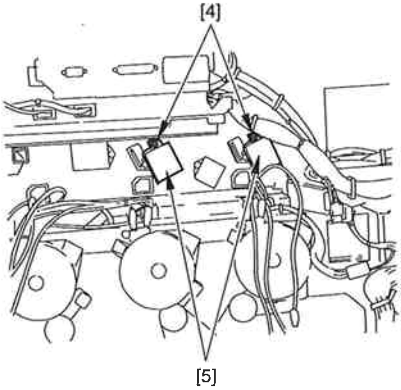


Figure 4-622B

5) Mark the position of the unit support plate [6].

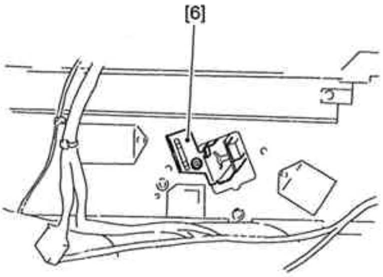


Figure 4-623B

6) Remove the screw [7], and disconnect the connector [8]; then, remove the BD unit [9].

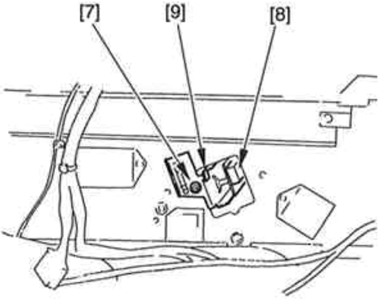


Figure 4-624B

- **Y/M BD Unit**

1) Lift the hopper assembly (See chapter 4. VII. HOPPER SYSTEM, A-1. Removing the Hopper Assembly).
2) Remove one screw each [1], and remove the unit cover [2] from the front.

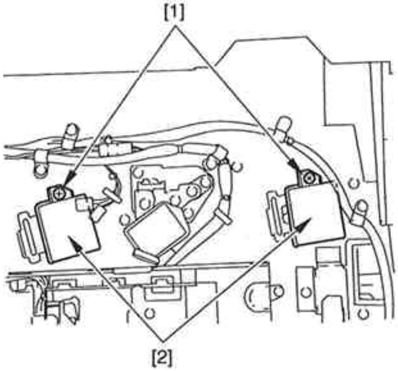


Figure 4-625B

3) Mark the position of the unit support plate [3].

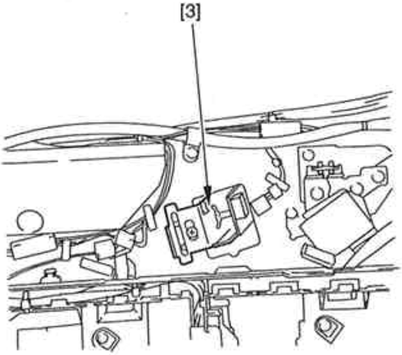


Figure 4-626B

4) Remove the screw [4], and disconnect the connector [5]; then, remove the BD unit [6].

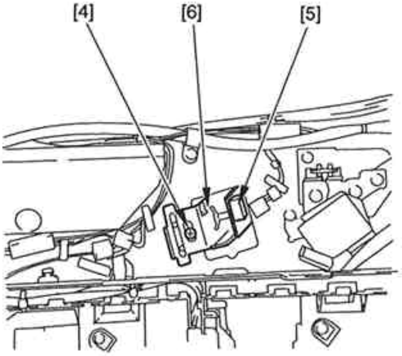


Figure 4-627B

You must execute 'FUNC > INSTALL > REG-APER' in service mode whenever you have installed the BD unit.

VII. HOPPER SYSTEM

A. Hopper Assembly

1. Removing the Hopper Assembly

1) Remove the hopper left/right cover [1] (screw [2]), and remove the two fixing screws [3] of the hopper assembly.

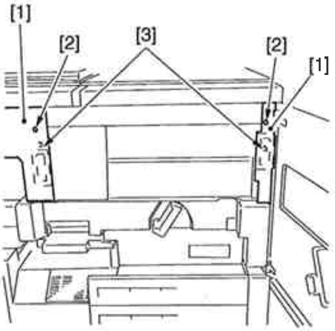


Figure 4-701A

2) Hold the left and right grips [4], and while pulling to the front, lift the hopper assembly.

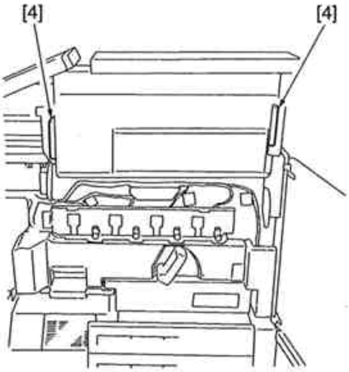


Figure 4-702A

⚠ Make a visual check to be sure that the locking mechanism under the hopper assembly is securely engaged.

3) Remove the screw [5] from the right grip assembly.

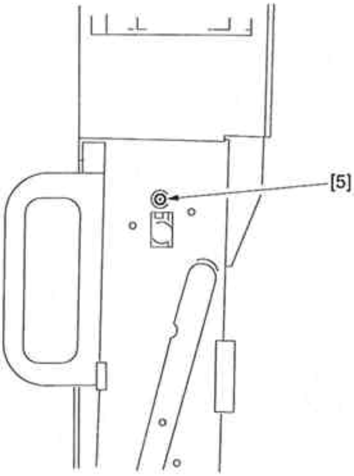


Figure 4-703A

4) Install the hopper middle position metal fixing [6] (left, right).

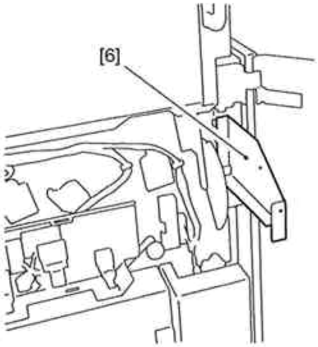


Figure 4-704A

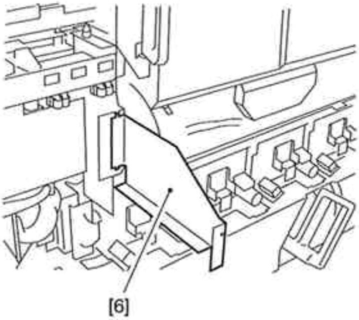


Figure 4-705A

5) Release the lock [7] found in the lower left of the hopper.
6) Return the hopper assembly [8] where the middle position metal fixing [8] installed in step 4) is located.

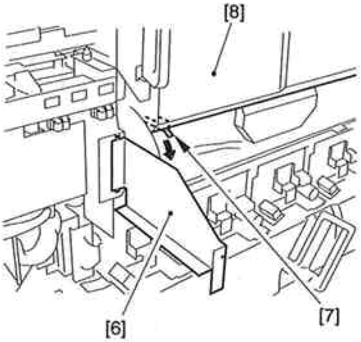


Figure 4-706A

7) Remove the screw [9] from the left grip assembly.

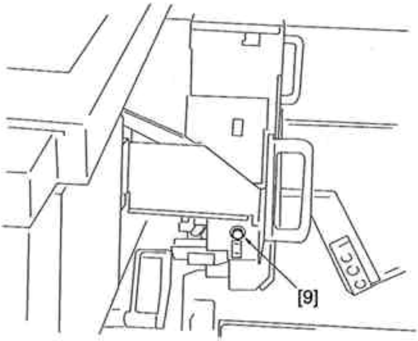


Figure 4-707A

8) Secure the hopper assembly [8] to the midway metal fixing (left, right) with screw each [10].

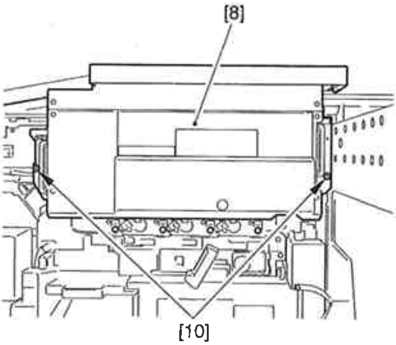


Figure 4-708A

9) Lift the right end of the control panel, and push in the slider [11] to remove the control panel.

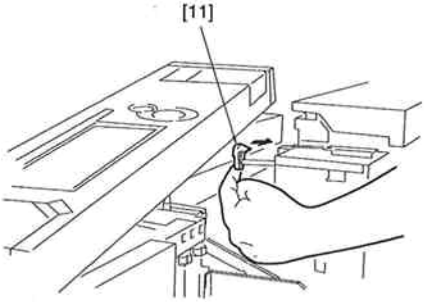


Figure 4-709A

10) Lift the hopper assembly by holding it on its top left and right to remove.

2. Keeping the Hopper Assembly from Tumbling Down

1) Remove the hopper lower front cover, and keep a screwdriver through the hole [1] as shown in Figure 4-709A to keep the hopper assembly from tumbling down.

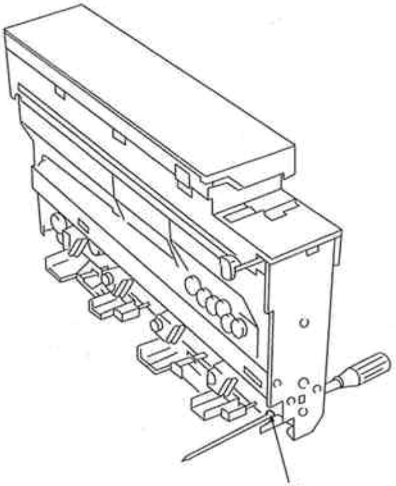


Figure 4-710A

3. Removing the Hoppers

1) Remove the hopper assembly.
2) Remove the hopper lower front cover, and keep a screwdriver through the hole (See chapter 4. VII. HOPPER SYSTEM, A-2. Keeping the Hopper Assembly from Tumbling Down).
3) Remove the five screws [1], and remove the hopper top unit cover [2].

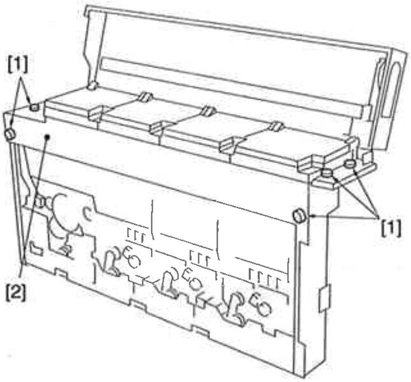


Figure 4-711A

4) In the case of Y/M/C hopper, remove the screw [3] and E-ring [4], and disconnect the two connectors [5] for each color; then, remove two screws [6] at the back.

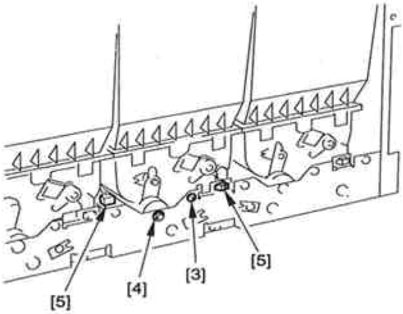


Figure 4-712A

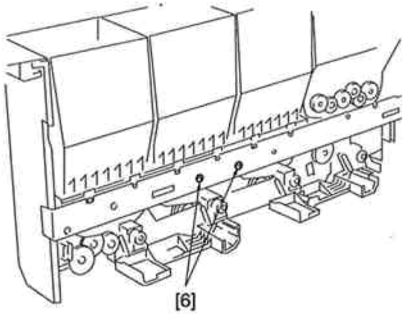


Figure 4-713A

5) In the case of the Bk hopper, remove the screw [7] and the E-ring [8], and disconnect the two connectors [9] from the front; then, remove two screws [10] from the back.

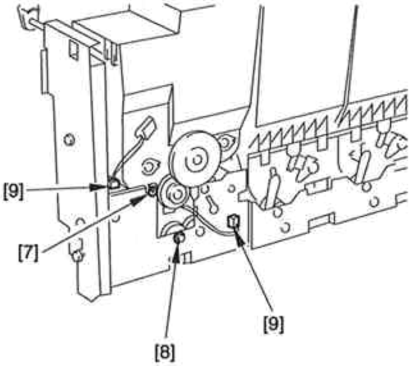


Figure 4-714A

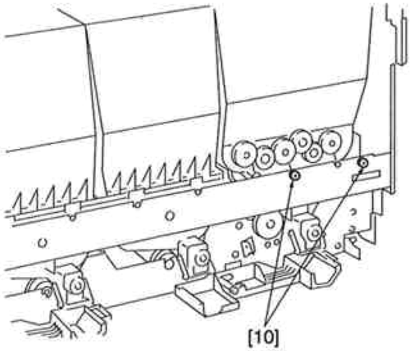


Figure 4-715A

When installing the hopper, take extra care so that the toner supply shutter [1] will not interfere with the gear of the drive unit; otherwise, toner may spill.

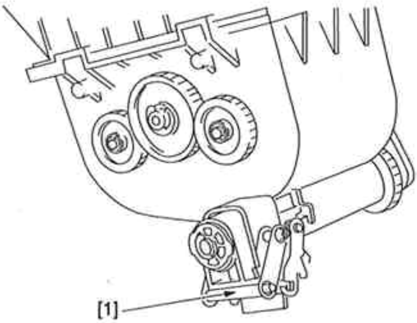


Figure 4-716A

4. Removing the Toner Level Sensor

1) Remove the hopper left/right cover, and remove the two fixing screws [1] of the hopper assembly.

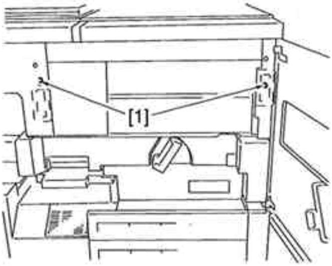


Figure 4-717A

2) Hold the left and right grips, and lift the hopper assembly while pulling it to the front.
3) Remove the four screws [2], and remove the hopper lower front cover [3].

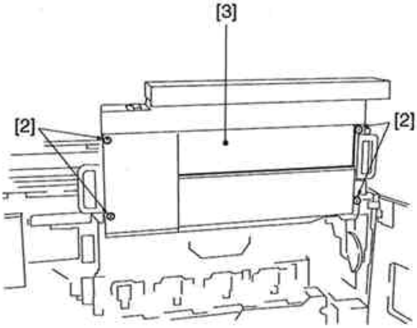


Figure 4-718A

4) Remove the toner level sensor.

- ■ In the case of a color toner hopper [4], disconnect the connector [5], and remove the two screws [6]. (sub toner level sensor)

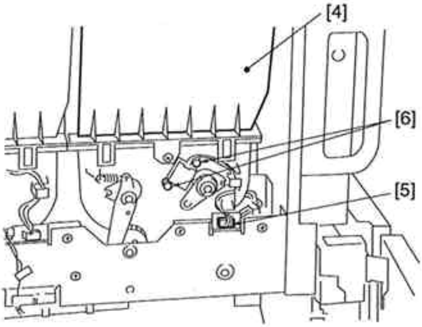


Figure 4-719A

- ■ In the case of the main toner level sensor [7], remove the hopper; then, disconnect the connector, and remove the two screws [8].

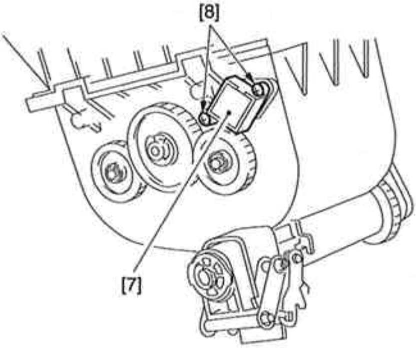


Figure 4-720A

- In the case of the black toner main hopper [9], remove the two drive gears* [10]; then, disconnect one connector each [11], and remove the two mounting screws [12] each.
  - * Pay attention to the E-ring, C-ring, and internal parallel pin.

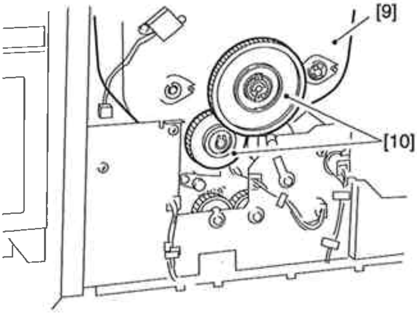


Figure 4-721A

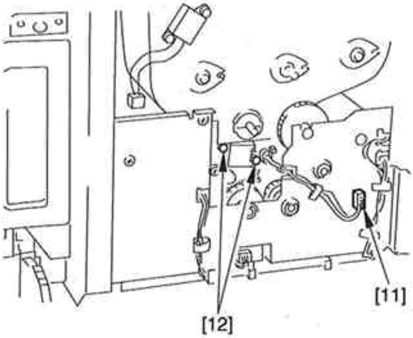


Figure 4-722A

- In the case of the sub hopper toner sensor [13], remove the two mounting screws [14].

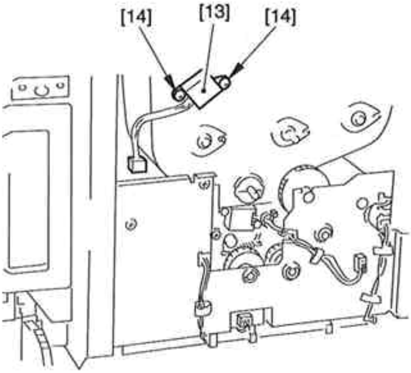


Figure 4-723A

VIII. CHARGING SYSTEM

A. Primary Charging Assembly

1. Outline

The CLC1000's primary charging assembly houses the pre-primary charging assembly.

2. Removing the Primary Charging Assembly

1) Lift the hopper assembly.
2) Pull out the primary charging assembly.

3. Removing the Grid Plate

1) While pushing the knob [1], remove the grid plate [2].

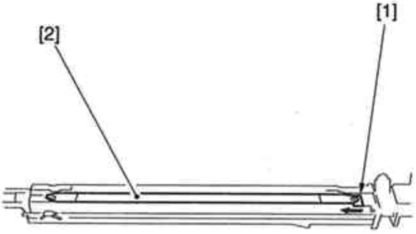


Figure 4-801A

> Do not clean the grid plate or the primary charging wire. If images are not even in density or faulty, replace them.

4. Removing the Primary Charging Assembly Cleaning Pad

1) Remove the two screws [1], and remove the shielding plate [2] from the primary charging assembly.

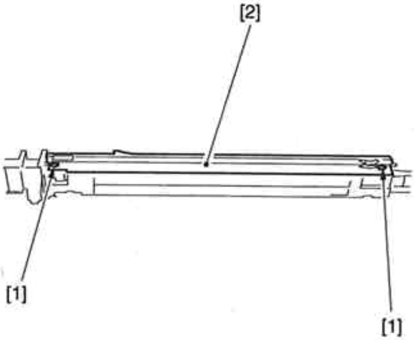


Figure 4-802A

2) Pick the cleaning pad [3], and disengage the hook [4].

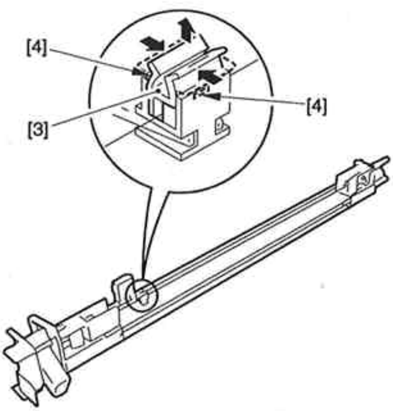


Figure 4-803A

B. Separation/Pre-Fixing Assembly

1. Removing the Separation/Pre-Fixing Assembly

1) Open the left and right front covers, and emove the hopper left cover; then, pull out the separation/pre-fixing charging assembly 1 (1 connector [2], 1 mounting screw [3]).

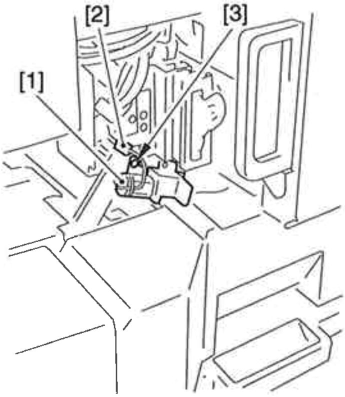


Figure 4-801B

2. Routing the Gut Wire

Route the gut wire as shown in Figure 4-802B.

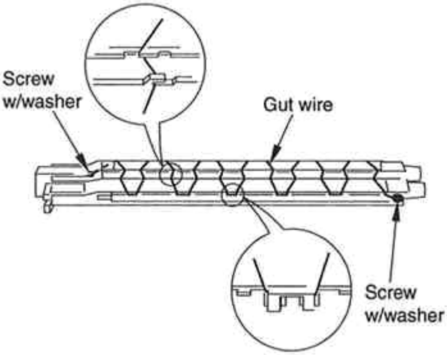


Figure 4-802B

IX. PROCESS UNIT SYSTEM

A. Process Unit

1. Sliding Out the Process Unit

1) Shift down the releasing lever [1] of the transfer unit to release the transfer belt from the photosensitive drum.

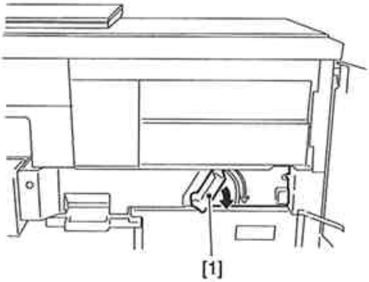


Figure 4-901A

2) Lift the hopper unit.
3) Remove the four primary charging assemblies [2].

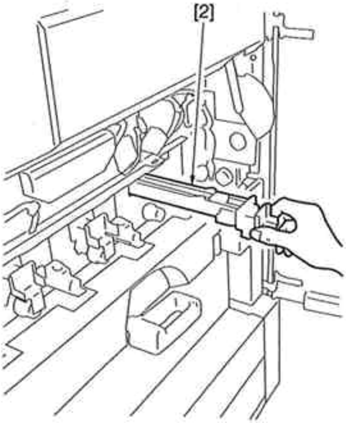


Figure 4-902A

⚠ If you have removed the primary charging assembly, be sure to place it so that the grid face is up.

4) Remove the four positioning knobs [3] of the photosensitive drum. (Turn the smaller knob in the middle counterclockwise.)

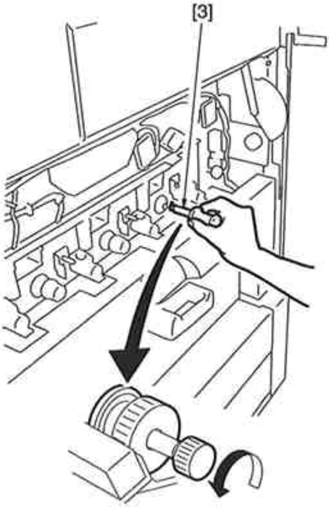


Figure 4-903A

5) Remove the two screws [5] of the process unit [4].

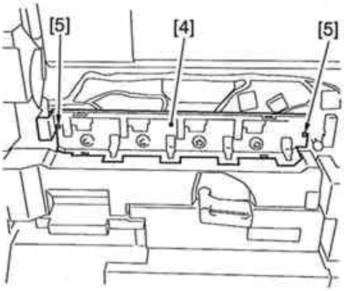


Figure 4-904A

6) Install the two process unit grips [7].

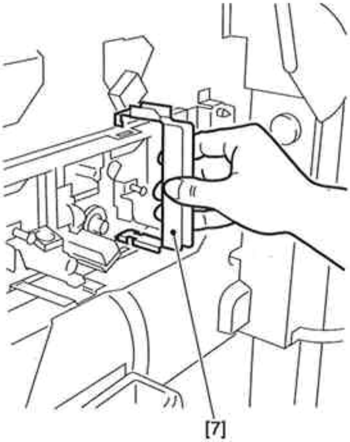


Figure 4-905A

7) Slide out the process unit [4] fully to the front.

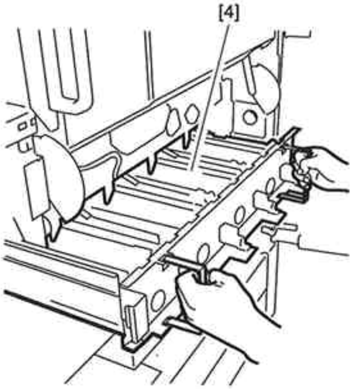


Figure 4-906A

2. Removing the Developing Assembly/Cleaning Unit

1) Remove the screw [1] (w/ spring).

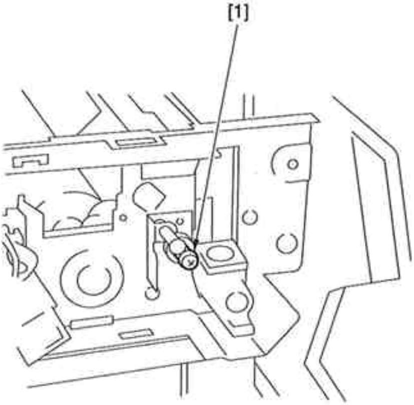


Figure 4-907A

2) Pull out the positioning pin [2].

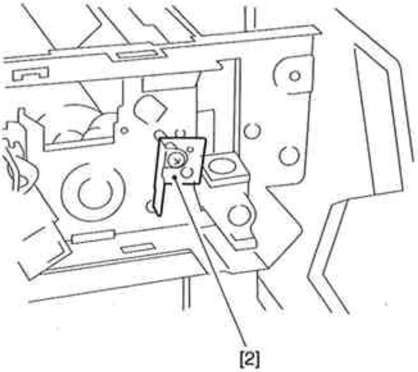


Figure 4-908A

3) While holding the grips [3], lift the developing assembly/cleaning unit [4] about 5 cm; then, shift it to the rear to remove.

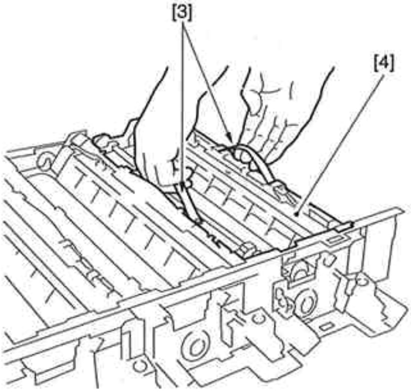
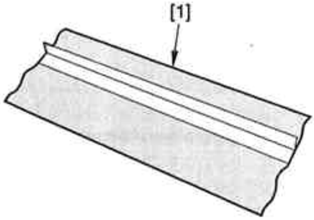


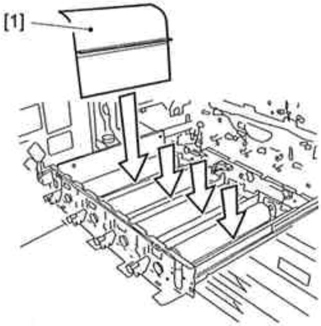
Figure 4-909A

Points to Note after Removing the Developing Assembly/Cleaner Unit
- Be sure to spread paper under it to prevent soiling with toner.
- Do not move a unit over units of different colors.

3. Installing the Process Unit

1) Remove all developing assemblies, and install the protection sheet [1] to each photosensitive drum.





- Do not touch the drum contact face.
- Dry wipe it with lint-free paper before use.

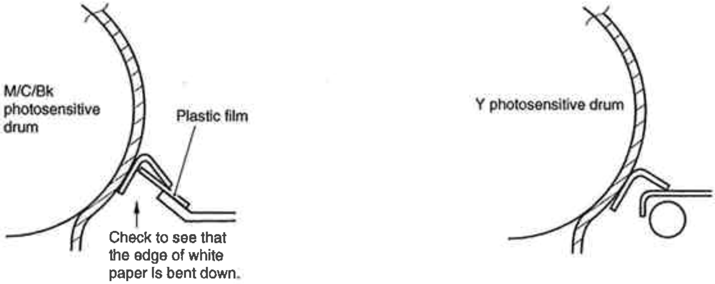

M/C/Bk photosensitive drum
Plastic film
Check to see that the edge of white paper is bent down.
Y photosensitive drum

Figure 4-910A

2) Set the developing assembly [2] in the process unit.

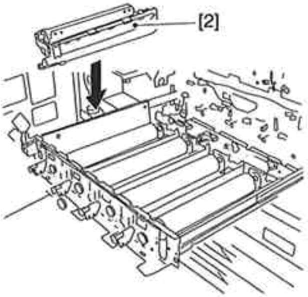


Figure 4-911A

3) Match the two bosses [3] found on the inner side of the flange shaft of the photosensitive drum with the grooves [4] of the drum shaft as shown.

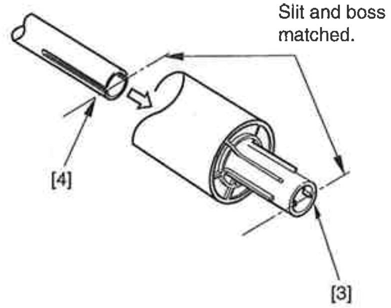


Figure 4-912A

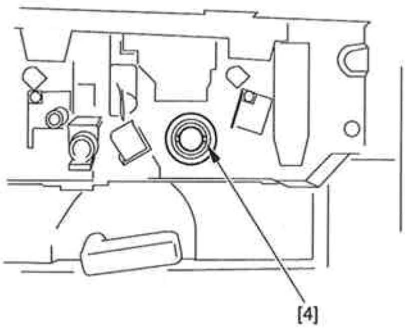


Figure 4-913A

You must lift the developing assembly and move it away from the photosensitive drum when rotating the photosensitive drum to prevent damage to the drum.

4) Fix the developing assembly in place with the positioning pin.
5) Set the process unit in the copier.
6) Secure the positioning pin with screw (w/ spring).

When setting the process unit in the copier, make sure that the bosses inside the photosensitive drum flange and the grooves in the drum shaft are matched. Take care not to force the process unit to avoid scratching the surface of the drum.

7) Slide out the transfer unit, and remove the drum protection sheet [5] in the direction of the arrow.
Store away the drum protection sheet for future use.

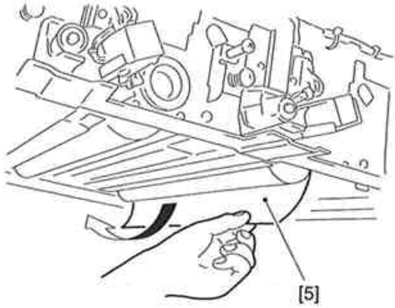


Figure 4-914A

Points to Note When Handling the Drum Protection Sheet

- Do not touch the face that will come into contact with the drum.
- Put it in a plastic bag to avoid contact with dust and oil.
- If it must be rolled, be sure that the face that will come into contact with the drum is inside.
- Be sure to dry-wipe the drum contact face with lint-free paper before using it again.

B. Cleaning Assembly

1. Separating the Developing Assembly and the Cleaning Unit

1) Remove one screw [1] each from the front and rear side plates of the developing assembly/cleaning assembly; then, shift the cleaning unit [2] to the rear to separate.

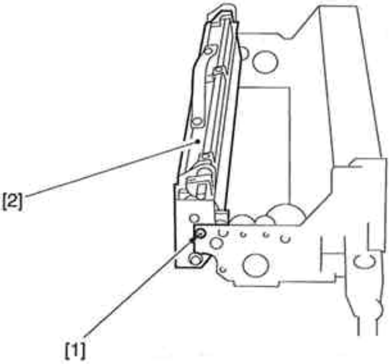


Figure 4-901B

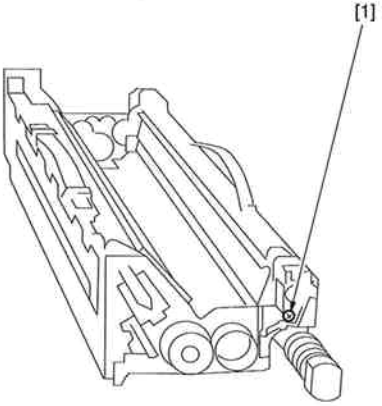


Figure 4-902B

2. Removing the Cleaning Blade

1) Remove the developing assembly/cleaning unit from the copier (See chapter 4. IX. PROCESS UNIT SYSTEM, A-2. Removing the Developing Assembly/Cleaning Unit).
2) Remove the two screws [1], and remove the cleaning blade [2] together with its support plate.

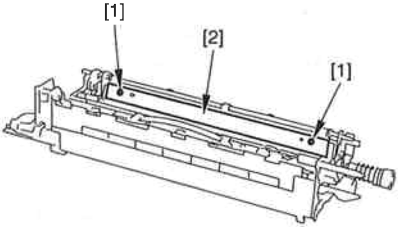


Figure 4-903B

3. When Replacing the Cleaning Blade

The cleaning blade comes coated with lubricant. However, be sure to perform the following to ensure an even coating of lubricant:

1) Wrap lint-free paper around a finger, and remove the lubricant from the edge [3] of the blade, i.e., where it will come into contact with the drum.
   Be sure not to force the paper to avoid damaging the edge.

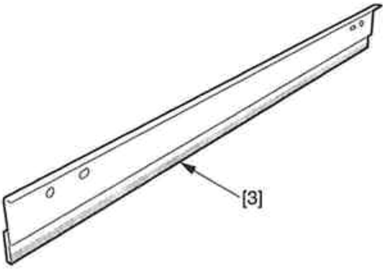


Figure 4-904B

2) Put lubricant on the lint-free paper, and apply it along the edge of the blade in a thin, even film.

Points to Note

If the lubricant is not even, the copies may carry white, vertical lines.

- Limit the application to the edge of the blade, i.e., where it will come into contact with the drum.
- Do not rub the edge with force. Tap lightly over the edge to avoid damage.
- For the edge, apply it in three strokes in the direction of the arrow (same direction)

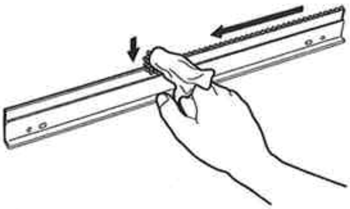


Figure 4-905B

4. Removing the Cleaner Side Seal

1) Remove the developing assembly/cleaning unit from the copier (See chapter 4. IX. PROCESS UNIT SYSTEM, A-2. Removing the Developing Assembly/Cleaning Unit).
2) Remove the screw [1], and remove the cleaner side seal [2].

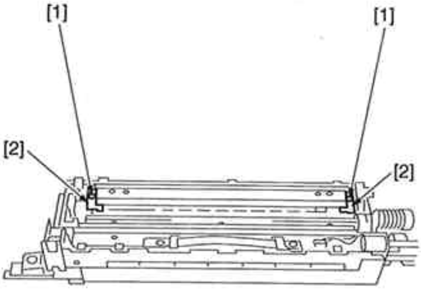


Figure 4-906B

Points to Note When Installing the Cleaner Side Seal

- Be sure that the gap between the blade and the cleaner side seal is 0.5 mm as shown. Try pressing on the cleaner side seal to make sure that it will not get caught on the blade.

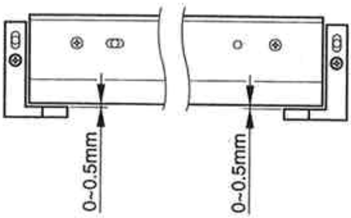


Figure 4-907B

5. Removing the Cleaner End Seal

1) Remove the developing assembly/cleaning unit from the copier (See chapter 4. IX. PROCESS UNIT SYSTEM, A-2. Removing the Developing Assembly/Cleaning Unit).
2) Remove the cleaning blade.
3) Remove one screw [1] each from the front and rear; then, remove the cleaner end seal [2].

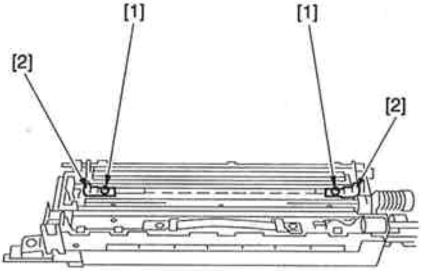


Figure 4-908B

6. Removing the Cleaning Assembly Scoop-Up Sheet

1) Remove the developing assembly/cleaning unit from the copier (See chapter 4. IX. PROCESS UNIT SYSTEM, A-2. Removing the Developing Assembly/Cleaning Unit).
2) Separate the developing assembly and the cleaning unit.
3) Remove the three screws [1], and remove the cleaning assembly scoop-up sheet [2] together with its support plate.

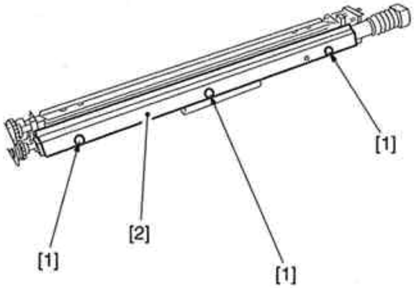


Figure 4-909B

C. Developing Assembly

1. Cleaning the Developing Assembly Upper Cover

You may clean the developing assembly upper cover if the copies have blots of toner or when replacing the photosensitive drum.

1) Slide out the process unit from the copier.
2) Remove the developing assembly.
3) Remove the four fixing screws [1], and remove the developing assembly upper cover [2].

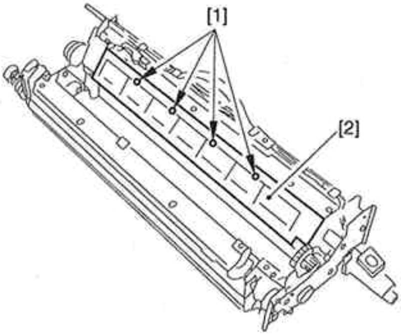


Figure 4-901C

4) Turn over the developing assembly upper cover, and remove the toner collecting on the plastic film [3] with a blower brush or lint-free paper.

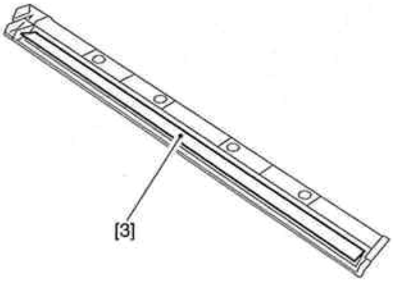


Figure 4-902C

Take care not to deform the plastic film.

5) Thereafter, clean the surface (shaded) of the developing assembly upper cover with alcohol.

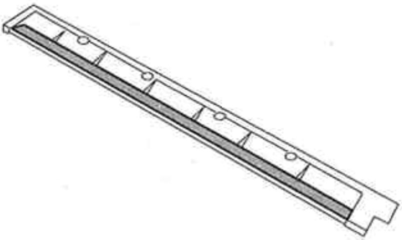


Figure 4-903C

Using alcohol will eliminate static charges. Be sure to perform this step to protect the potential sensor from adverse effects.
Be sure not to touch the surface of the cover after cleaning.

6) Holding the developing assembly upper cover on its edges, install the developing assembly.

2. Replacing the Color Toner Density Sensor

1) Slide out the process unit from the machine.
2) Remove the developing assembly.
3) Remove the four screws, and remove the developing assembly upper cover.
4) Remove the four fixing screws [1], and disconnect the connector [2]; then, remove the color toner density sensor [3].

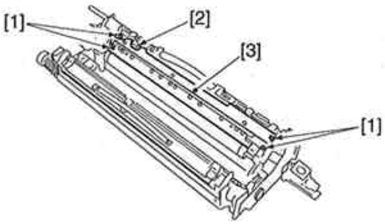


Figure 4-904C

5) Remove the four screws [5], and remove the two blade metal plates [4] from the color toner density sensor [3]; then, install the new color toner density sensor unit with four screws [1].

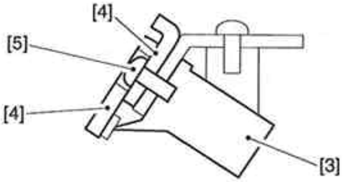


Figure 4-905C

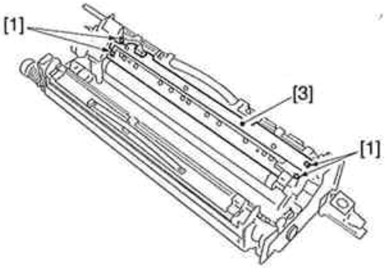


Figure 4-906C

6) Using the S-B gap adjusting jig [6] (FY9-3024), fix the blade metal plate [4] in place with four screws [5].

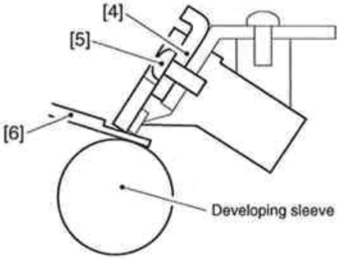


Figure 4-907C

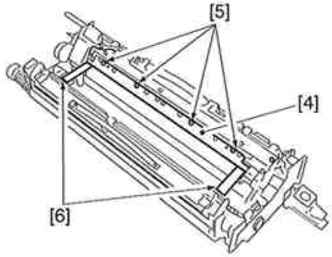


Figure 4-908C

Points to Note When Adjusting the S-B Gap

- Be sure to use the S-B gap adjusting jig outside the image area of the developing sleeve.
- Be sure to make adjustments only after cleaning the toner off the developing sleeve with lint-free paper.
- After making S-B gap adjustments, check to make sure that the "go" side of the adjustment jig can slide (but not the "not" side) into the gap.

7) Connect the connector, and install the developing assembly upper cover.

D. Photosensitive Drum

1. Removing the Photosensitive Drum

1) Remove the process unit from the copier, and remove the developing assembly/cleaning unit (See chapter 4. IX. PROCESS UNIT SYSTEM, A-2. Removing the Developing Assembly/Cleaning Unit).
2) While holding both ends of the drum [1], lift it to remove.

When removing the photosensitive drum, take extra care not to damage it.

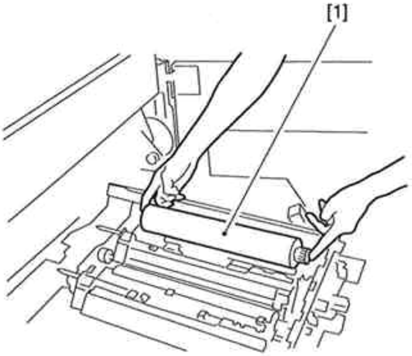


Figure 4-901D

2. Cleaning the Photosensitive Drum

If the surface of the photosensitive drum is soiled, clean it with a cloth coated with toner. (Do not use paper, lint-free or otherwise.)

Do not dry-wipe or use solvent.
Do not use drum cleaning powder.

3. Points to Note When Installing the Photosensitive Drum

- Make sure that the two bosses [1] on the inside of the flange shaft of the photosensitive drum match the slits [2] in the drum shaft.

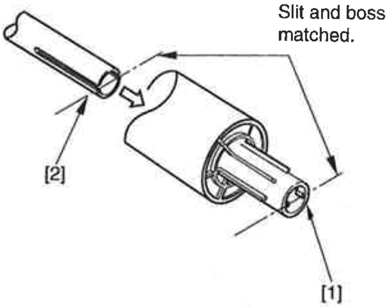


Figure 4-902D

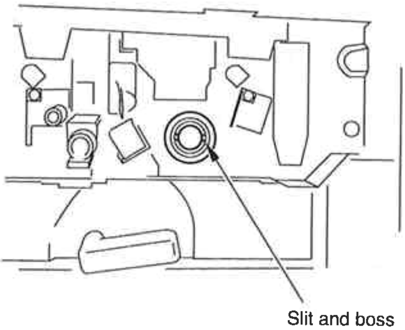


Figure 4-903D

E. SALT Sensor

1. Removing the SALT Sensor

1) Open the front cover, and lift the hopper assembly all the way up.
2) Disconnect the two connectors [1], and remove the screw [2]; then, pull out the SALT sensor unit [3].

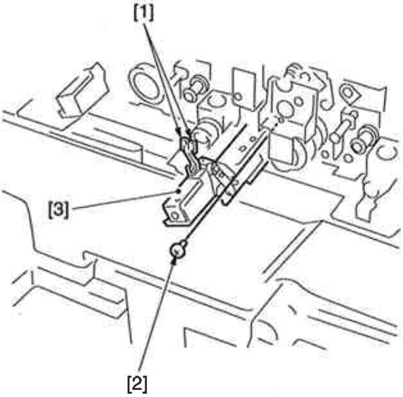


Figure 4-901E

- When holding the SALT sensor unit, take care not to touch its stainless steel area [4] (where black plastic film is attached; fail ure to do so could damage the shutter assembly).

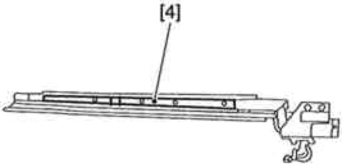


Figure 4-902E

- If you have replaced the SALT sensor, be sure to replace the developing agent of the corre sponding color. (See the instructions on how to replace.)

2. Cleaning the SALT Sensor Unit

1) Remove the SALT sensor unit.
2) Spread paper, and remove the toner which has collected on the No. 2 scoop-up sheet [1].

Exercise care not to subject the positioning pin at the rear of the SALT sensor unit to impact to avoid deformation.

3) Dry wipe the No. 2 scoop-up sheet with lint-free paper or clean it with a blower brush.

Take care not to deform the No. 2 scoop-up sheet.

4) Spread paper, and pour out the toner which has collected on the plastic film [2] over the paper.

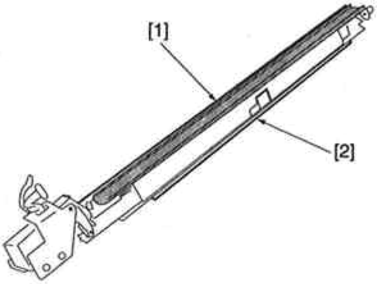


Figure 4-903E

5) Spread paper, and remove the toner which has collected on the surface of the sensor cover [3] and the exposed area of the shutter assembly [4] with a blower brush.

Take extra care to prevent deformation. The shutter assembly is very fragile.

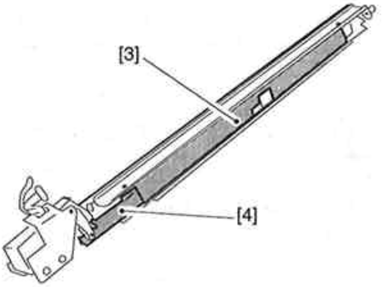


Figure 4-904E

6) Pull the solenoid arm [5] with a finger, and open the shutter; then, clean the sensor face [6] with a blower brush.

Do not apply excessive force when cleaning the sensor face. Use light tapping motions.

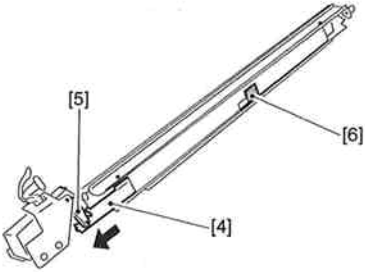


Figure 4-905E

7) Put the solenoid arm back into its initial position with a finger; then, close the shutter.

8) After installing the SALT sensor, execute 'FUNC > INSTALL > WINCLR-Y/M/C/K' in service mode.

3. Disassembling and Cleaning the Inside of the SALT Sensor Unit

1) Remove the SALT sensor unit.

2) Clean the outside of the unit as shown in "Chapter 4. IX. PROCESS UNIT SYSTEM, E-2. Cleaning the SALT Sensor Unit."

3) Spread paper, and remove the No. 2 scoop-up sheet [1] (2 mounting screws) and the lower film sheet [2] (2 mounting screws) over the paper.

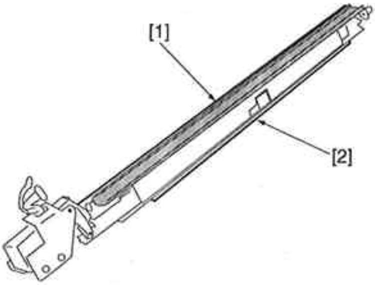


Figure 4-906E

4) Remove the two mounting screws [4], and remove the shutter cover [3].
   Clean the shutter cover with lint-free paper.

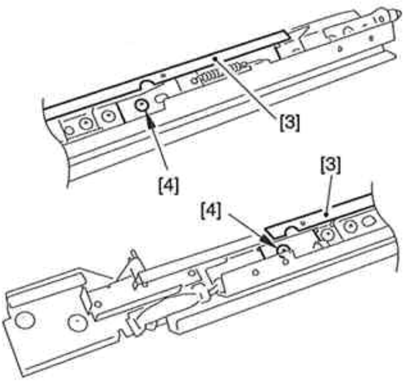


Figure 4-907E

5) Remove the spring [5], and remove the shutter [6].
   Clean the shutter with lint-free paper.

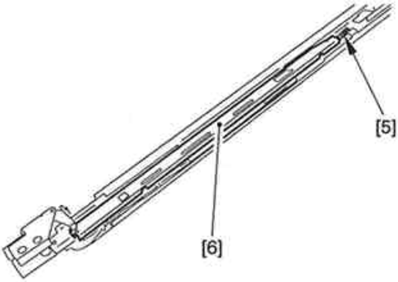


Figure 4-908E

6) Clean the SALT sensor inside plastic sheet [7], shutter contact member [8] with lint-free paper moistened with alcohol.
   Use dry lint-free paper for the SALT sensor face [9].

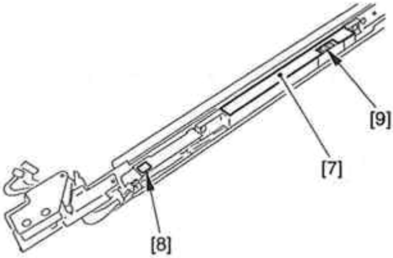


Figure 4-909E

7) Install all parts by reversing the steps used to remove them.
8) Check to make sure that the shutter moves smoothly.

F. No. 2 Scoop-Up Sheet

1. Removing the No. 2 Scoop-Up Sheet

1) Remove the SALT sensor unit.
2) Remove the two screws [1], and remove the No. 2 scoop-up sheet [2].

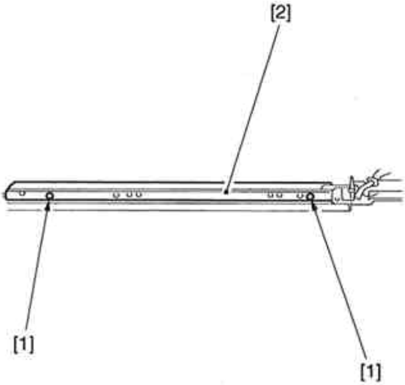


Figure 4-901F

X. FIXING SYSTEM

A. Fixing Assembly

Maintenance work for parts associated with the CLC1000's fixing assembly may be performed without removing the fixing assembly.

1. Removing the Fixing Assembly

Do not remove the fizmbly to remove such parts as the fixing roller. The CLC1000's fixing assembly is independent from the lower oil pan; to remove the fixing assembly, you must draw the fixing oil collecting in the upper oil pan to the oil bottle as instructed below.

1) Open the front cover (left).
2) Remove the screw [1], and remove the fixing assembly knob [2].
3) Remove the two screws [3], and remove the fixing assembly lever [4].
4) Remove the two screws [5], and remove the fixing assembly front cover [6].
5) Open the external delivery unit and the internal delivery unit.

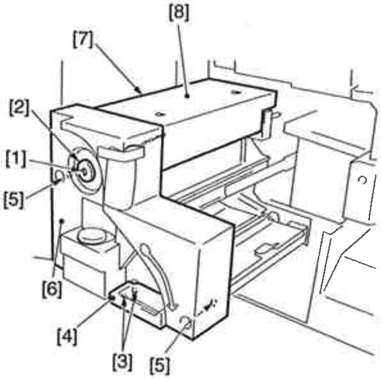


Figure 4-1001A

6) Remove the screw [7], and remove the upper fixing cover [8].
7) Remove the two screws [9], and open the upper fixing roller unit [10].

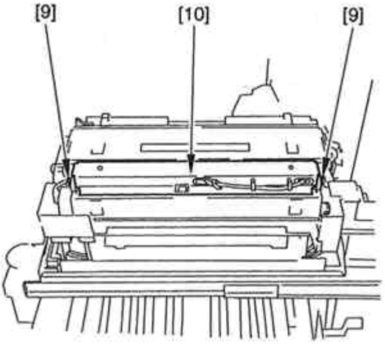


Figure 4-1002A

8) Remove the screw [11] from the rear of the upper oil pan; then, wait until all fixing oil has collected in the oil tank.

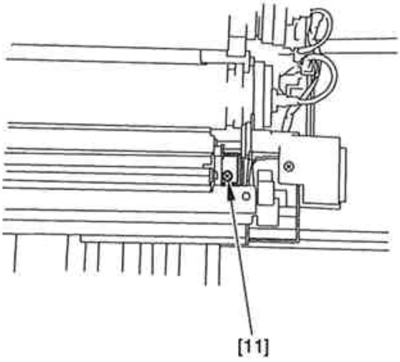


Figure 4-1003A

9) Close the upper fixing roller unit.
10) Remove the two screws [12]; while holding the grips [13], lift the fixing assembly [14] to remove. At this time, be sure to fit the screw [9] removed in step 7).

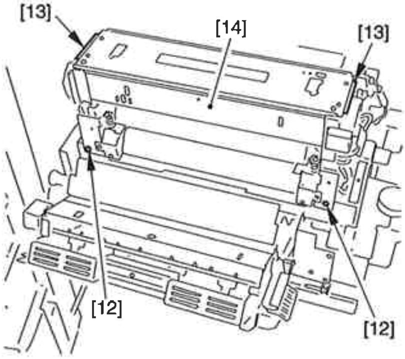


Figure 4-1004A

Take care. The oil filter may stick to the bottom of the fixing assembly when the assembly is lifted.

2. Opening the Upper Fixing Roller Unit

1) Open the front cover (left), shift down the fixing assembly lever, and slide out the fixing lever (2 screws).
2) Remove the fixing assembly knob (1 screw), and remove the fixing assembly lever (2 screws).
3) Remove the two screws, and remove the fixing assembly front cover.
4) Open the external delivery unit and the internal delivery unit.
5) Remove the screw, and remove the fixing assembly upper cover.
6) Remove the two screws [1], and open the upper fixing roller unit [2].

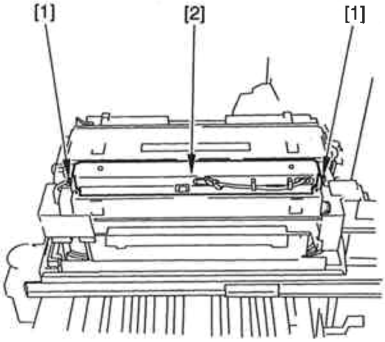


Figure 4-1005A

3. Removing the Upper Fixing Heater

1) Open the front cover (left), shift down the fixing lever, and slide out the fixing unit.
2) Remove the fixing assembly knob (1 screw), and remove the fixing assembly lever (2 screws).
3) Remove the two screws, and remove the fixing assembly front cover.
4) Pull out the faston (rear) [1] of the upper fixing heater.

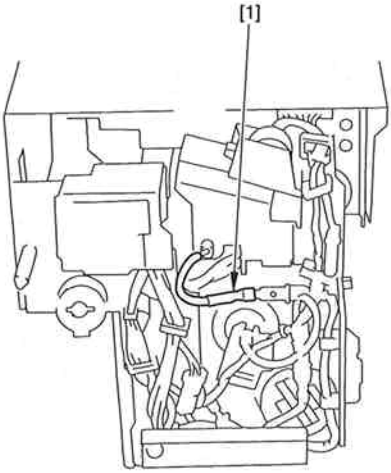


Figure 4-1006A

5) Pull out the faston [2] (front) of the upper fixing heater, and remove the screw [3] to remove the metal fixing [4].

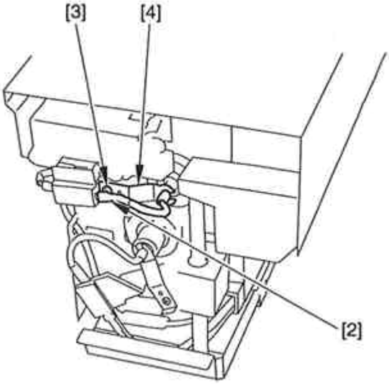


Figure 4-1007A

6) Pull out the upper fixing heater to the front.

4. Removing the Lower Fixing Heater

1) Open the front cover (left), shift down the fixing lever, and slide out the fixing unit.
2) Remove the fixing assembly knob (1 screw), and remove the fixing assembly lever (2 screws).
3) Remove the two screws, and remove the fixing assembly front cover.
4) Pull out the faston [1] (rear) of the lower fixing heater.

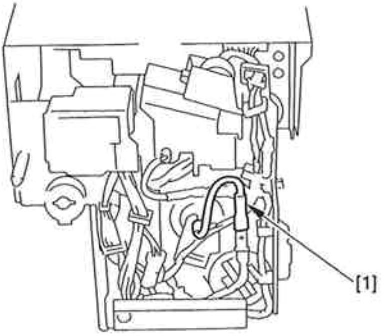


Figure 4-1008A

5) Pull out the faston [2] (front) of the lower fixing heater, and remove the screw [3] to remove the metal fixing [4].

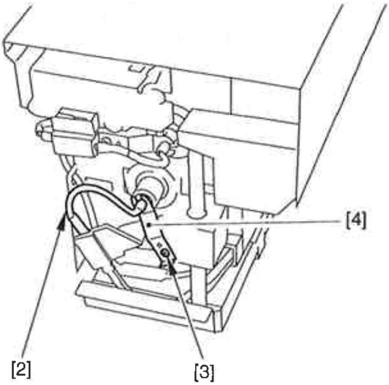


Figure 4-1009A

6) Pull out the lower fixing heater to the front.

5. Removing the Upper Fixing Roller

1) Open the upper fixing roller unit (See chapter 4. X. FIXING SYSTEM, A-2. Opening the Upper Fixing Roller Unit).
2) Remove the upper fixing heater (See chapter 4. X. FIXING SYSTEM, A-3. Removing the Upper Fixing Heater).
3) Remove the upper fixing roller metal fixing [1] (one each from front and rear).

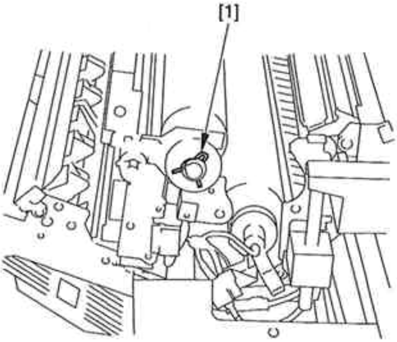


Figure 4-1010A

4) While shifting the bearing at the front of the upper fixing roller, remove the upper fixing roller.

6. Removing the Lower Fixing Roller

1) Open the upper fixing roller (See chapter 4. X. FIXING SYSTEM, A-2. Opening the Upper Fixing Roller Unit).
2) Remove the lower fixing heater (See chapter 4. X. FIXING SYSTEM, A-4. Removing the Lower Fixing Heater).
3) Remove the lower fixing roller metal fixing [1] (one each from front and rear).
4) While shifting the bearing (front, rear) of the lower fixing roller, remove the lower fixing roller [3].

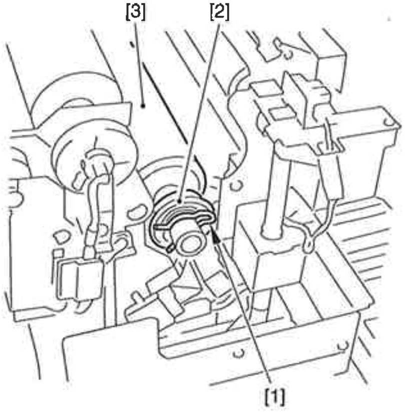


Figure 4-1011A

7. Removing the Fixing Thermistor (upper) Method 1

1) Open the upper fixing roller unit (See chapter 4. X. FIXING SYSTEM, A-2. Opening the Upper Fixing Roller Unit).
2) Remove the two fixing thermistor metal fixings [1].

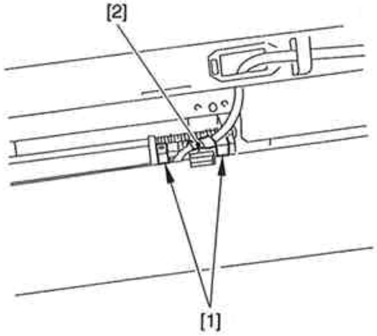


Figure 4-1012A

3) Free the cord of the thermistor from the cord clamp [2].
4) Disconnect the connector, and remove the fixing thermistor (upper).

8. Removing the Fixing Thermistor (upper) Method 2

1) Remove the upper fixing web unit (See chapter 4. X. FIXING SYSTEM, B-1. Removing the Upper Fixing Web).
2) Remove the screw [2] from the fixing thermistor mount [1].

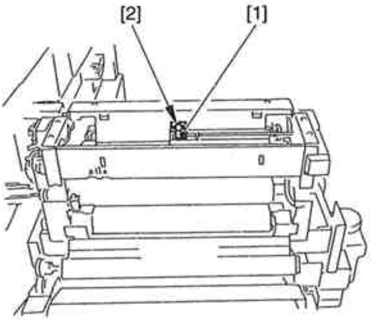


Figure 4-1013A

3) Open the upper fixing roller unit (See chapter 4. X. FIXING SYSTEM, A-2. Opening the Upper Fixing Roller Unit).
4) Turn the thermistor reciprocating cam [3] so that the thermistor is all the way to the front.

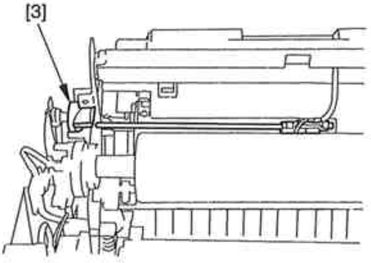


Figure 4-1014A

5) Remove the fixing thermistor (upper) unit [4].

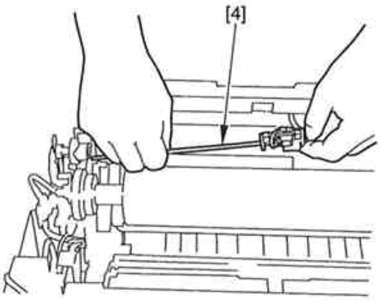


Figure 4-1015A

6) Remove the two fixing thermistor metal fixings, and free the cord from the cord clamp; then, disconnect the connector, and remove the fixing thermistor (upper).

9. Removing the Fixing Thermistor (lower)

1) Open the front cover (left), shift down the fixing assembly lever, and slide out the fixing unit.
2) Remove the two screws [1], and remove the fixing inlet guide mount [2].

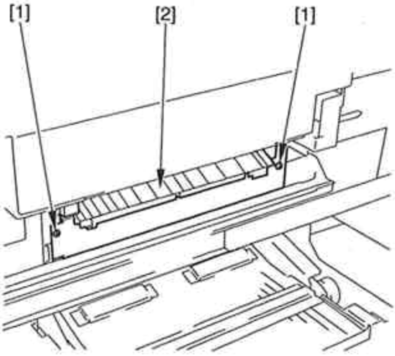


Figure 4-1016A

3) Remove the two screws [3], and remove the fixing thermistor (lower) mount [4].

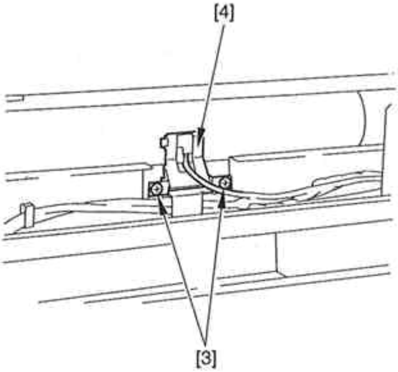


Figure 4-1017A

4) Remove the screw [5], and remove the fixing thermistor (lower) [6].

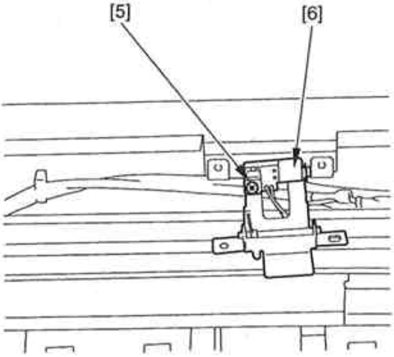


Figure 4-1018A

10. Removing the Fixing Thermal Switch (upper)

1) Remove the upper fixing roller (See chapter 4. X. FIXING SYSTEM, A-2. Opening the Upper Fixing Roller Unit).
2) Remove the two screws [1], and remove the fixing thermal switch [2] (upper).

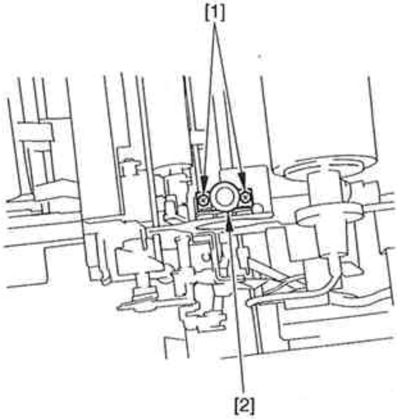


Figure 4-1019A

11. Removing the Fixing Thermal Switch (lower)

1) Remove the lower fixing roller (See chapter 4. X. FIXING SYSTEM, A-6. Removing the Lower Fixing Roller).
2) Remove the two screws [1], and remove the fixing thermal switch [2] (lower).

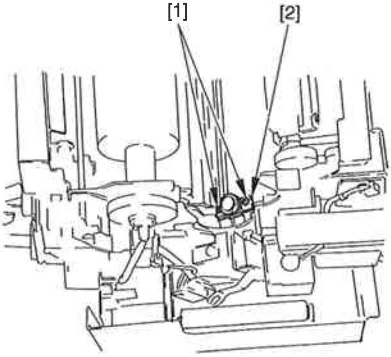


Figure 4-1020A

12. Removing the Oil Filter

1) Remove the fixing assembly (See chapter 4. X. FIXING SYSTEM, A-1. Removing the Fixing Assembly).
2) Remove the oil filter [1].

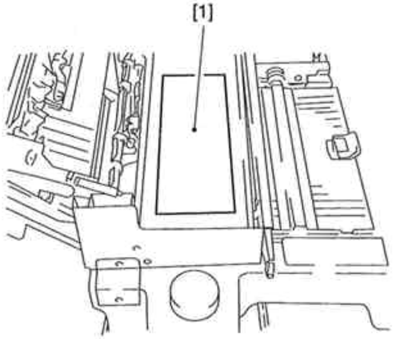


Figure 4-1021A

13. Removing the Oil Bottle

1) Remove the fixing assembly (See chapter 4. X. FIXING SYSTEM, A-1. Removing the Fixing Assembly).
2) Remove the screw [1], and remove the fixing assembly positioning plate (front) [2].
3) Remove the screw [3], and remove the oil bottle fixing plate [4].

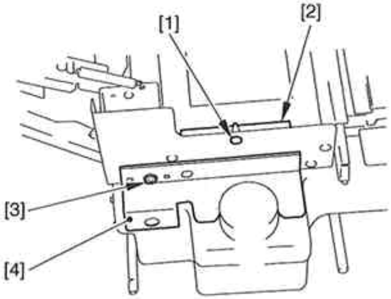


Figure 4-1022A

4) While lifting the front of the oil pan, remove the oil bottle.

B. Upper Fixing Cleaner Assembly

1. Removing the Upper Fixing Web

1) Open the front cover (left), shift down the fixing assembly lever, and slide out the fixing unit.
2) Remove the fixing assembly knob (1 screw), and remove the fixing assembly lever (2 screws).
3) Remove the two screws, and remove the fixing assembly front cover.
4) Open the external delivery unit and the internal delivery unit.
5) Remove the screw [1], and remove the fixing assembly upper cover [2].

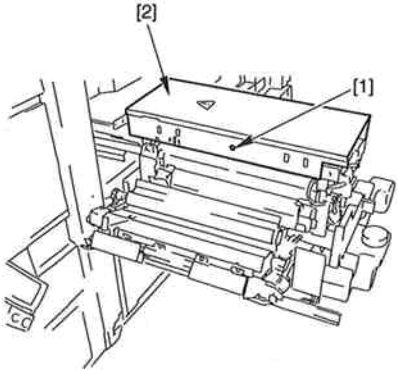


Figure 4-1001B

6) Remove the two screws [3], and remove the upper fixing web unit [4].

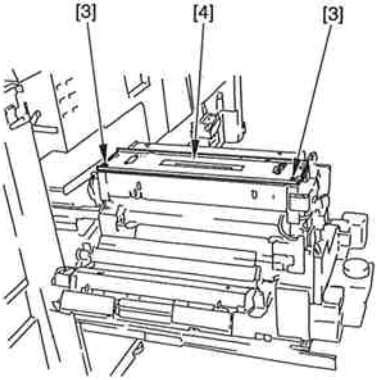


Figure 4-1002B

7) Insert the process unit tool [5] into the return-stop plate [6] as shown in Figure 4-1003B, and release the web [7].

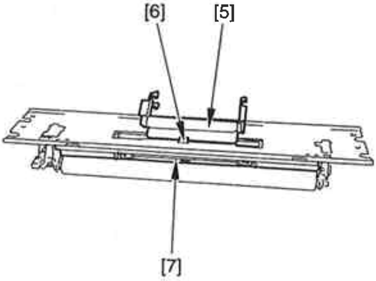


Figure 4-1003B

8) Remove the two screws [8] and two bushings [9]; then, remove the web [10].

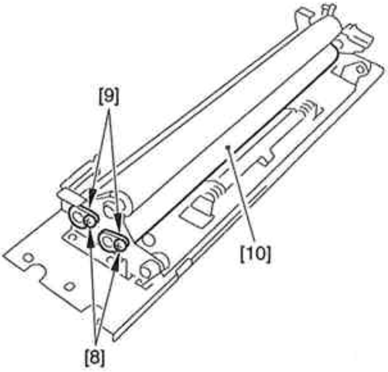


Figure 4-1004B

2. Installing the Upper Fixing Web

When installing the web [1], install the length detecting lever [2] as shown in Figure 4-1005B.

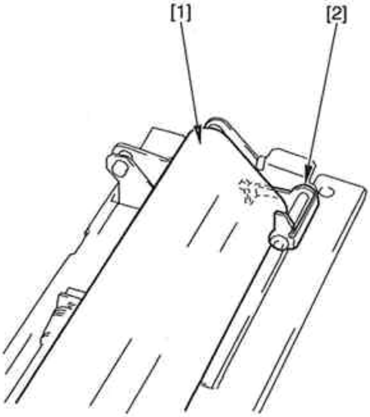


Figure 4-1005B

C. Fixing Lower Cleaning Assembly

1. Removing the Lower Fixing Web/ Lower Fixing Blade

1) Open the front cover (left), shift down the fixing lever, and slide out the fixing unit.
2) Remove the fixing assembly knob (1 screw), and remove the fixing lever (2 screws).
3) Remove the two screws, and remove the fixing assembly front cover.
4) Open the external delivery unit and the internal delivery unit.
5) Remove the two fixing screws [1], and pull out the lower fixing web unit [2].

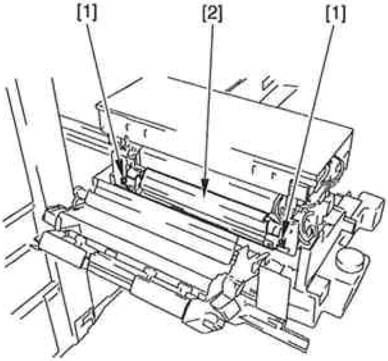


Figure 4-1001C

6) Remove the two screws [3] and two bushings [4]; then, remove the web [5].

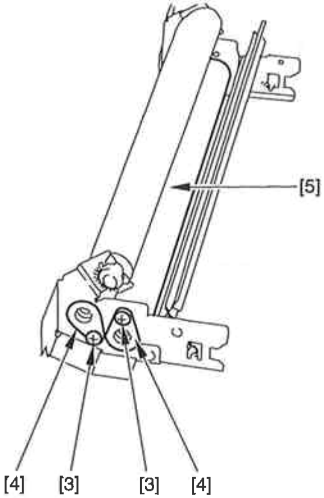


Figure 4-1002C

7) Remove the four screws [6], and remove the lower fixing blade [7].

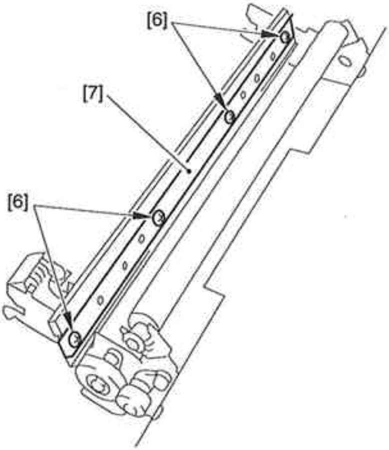


Figure 4-1003C

2. Removing the Lower Fixing Blade

To remove the lower fixing blade without removing the lower fixing web, work as follows:

1) Push down the blade mount [1] in the direction of the arrow to release; then, remove the four screws [2], and remove the lower fixing blade [3].

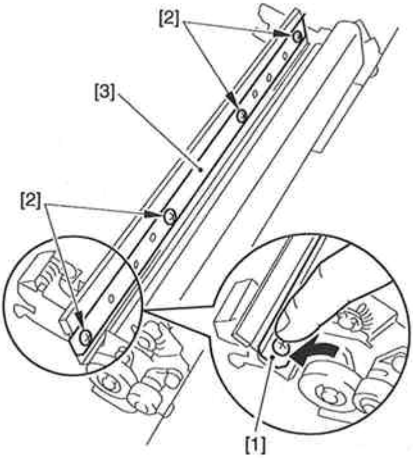


Figure 4-1004C

⚠ When installing the lower fixing blade [3] to the mount with screws [2], tighten the screws starting with the one on either end and then in sequence.

3. Installing the Lower Fixing Blade Mount

When installing the lower fixing blade mount, push down on the left end [1] of the blade mount to lock the blade mount [2].

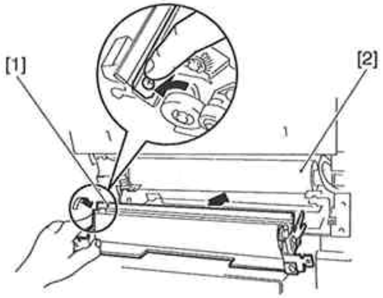


Figure 4-1005C

D. Fixing Oil Application Unit

1. Removing the Oil Applying Roller Blade Unit

1) Open the upper fixing roller unit (See chapter 4. X. FIXING SYSTEM, A-2. Opening the Upper Fixing Roller Unit).
2) Shift the oil applying roller blade unit [1] in the direction of the arrow, and lift it.

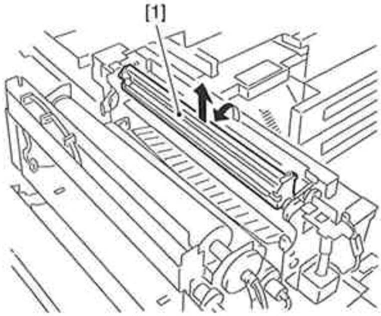


Figure 4-1001D

When installing the blade to the unit, be sure to return the blade unit as shown in the figure to prevent damage to the fixing roller.

2. Removing the Oil Applying Roller Blade

1) Remove the oil applying roller blade unit.
2) Remove the four screws [1], and remove the oil applying roller blade [2].

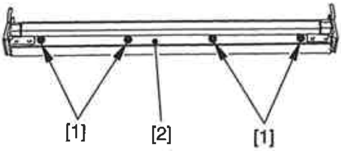


Figure 4-1002D

3. Removing the Oil Applying Roller

1) Remove the oil applying roller blade unit.
2) Remove the two E-rings (one each from front and rear) [1].
3) Remove the gear* [2], and remove the two bushings (one each from front and rear) [3].
   *Pay attention to the parallel pin inside.
4) Remove the oil applying roller.

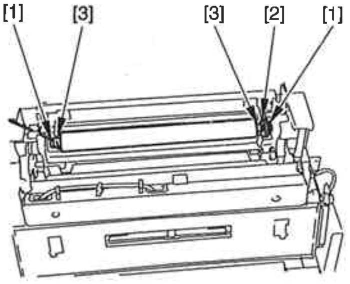


Figure 4-1003D

4. Opening the Oil Applying Roller Assembly

- When servicing the scoop-up roller assembly found at the bottom of the oil applying roller, work as follows:

1) Open the upper fixing roller unit.
2) Remove the screw [1] from the rear of the oil applying roller assembly.

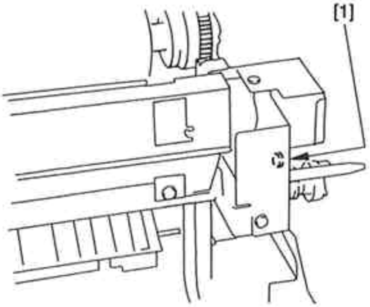


Figure 4-1004D

3) Loosen the screw [2] on the oil applying roller assembly (front), and remove the screw [3].
4) Open the oil applying roller assembly [4] in the direction of the arrow, and tighten the screw [2] to fix in position.

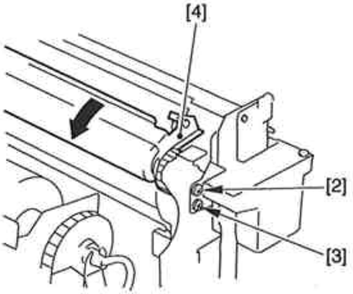


Figure 4-1005D

XI. ELECTRICAL SYSTEM

1. Removing the DC Controller PCB

1) Remove the rear cover 1.
2) Remove the nine screws [1], and remove the shield plate [2].

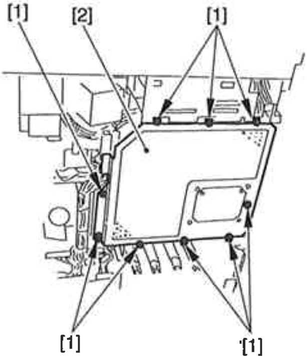


Figure 4-1101-1

3) Disconnect all connectors (32 connectors) from the DC controller PCB; then, remove the six screws, and remove the DC controller PCB.
4) Perform the steps shown for the replacement of the DC controller PCB.

2. Removing the AC Driver

1) Remove the rear cover.
2) Remove the screw [1], and remove the DC controller assembly [2].

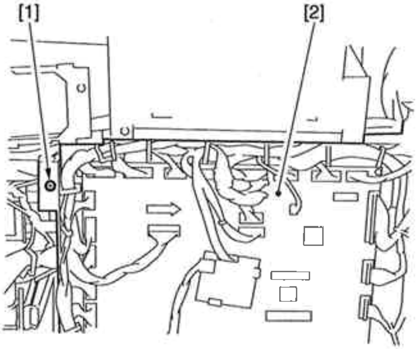


Figure 4-1101-2

3) Disconnect all connectors from the AC driver, and remove the four PCB supports [3] and the AC driver [4].

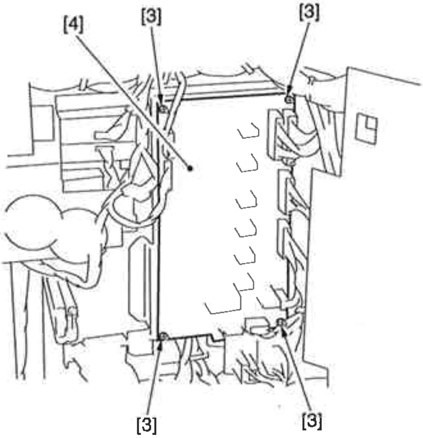


Figure 4-1102-2

3. Removing the Lamp Regulator

1) Remove the rear cover 1/2.
2) Disconnect the three connectors [1], and remove the two screws [2]; then, remove the lamp regulator [3].

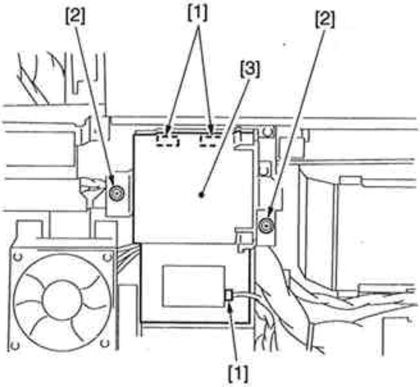


Figure 4-1101-3

4. Removing the Separation High-Voltage Transformer Unit

1) Remove the rear covers 1 and 2.
2) Remove the fixing screws, and open the DC controller assembly.
3) Disconnect the three connectors [1], and remove the two screws [2]; then, remove the screw [3], and remove the grounding wire to remove the separation high-voltage transformer [4].

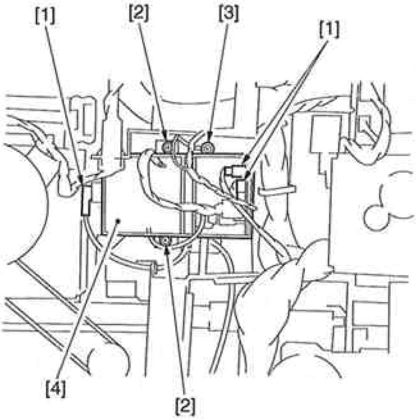


Figure 4-1101-4

5. Removing the Developing Bias High-Voltage Transformer

1) Remove the rear cover 1/2/3.
2) Disconnect the four connectors [1], and remove the four screws [2]; then, remove the power supply cooling fan unit [3].

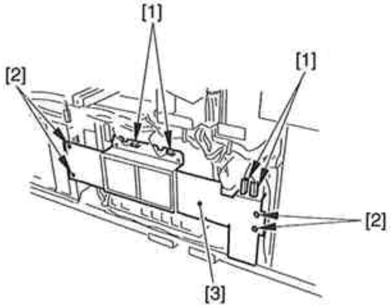


Figure 4-1101-5

3) Remove the two screws [4] and twelve connectors [5], and remove the developing bias high-voltage transformer unit [6] with lifting up.

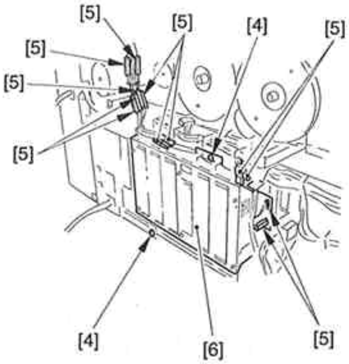


Figure 4-1102-5

6. Removing the Primary High-Voltage Transformer

1) Remove the rear cover 1/2.
2) Remove the two screws each [1], and remove the grounding wire [2]; then, remove the primary high-voltage transformer [3].

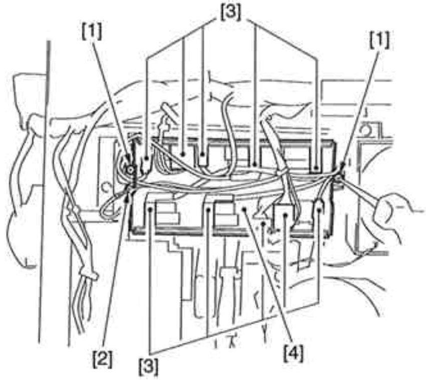


Figure 4-1101-6

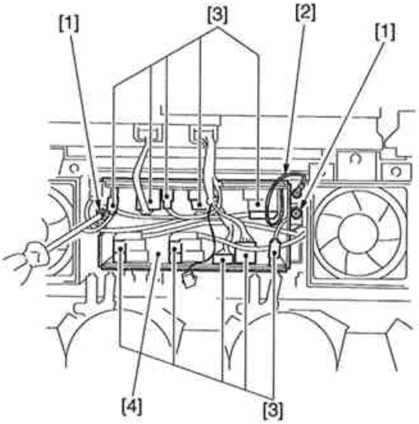


Figure 4-1102-6

7. Removing the DC Power Supply PCB

1) Slide out the cassette 1/2, and remove the four screws [1] to remove the waste toner cover [2].

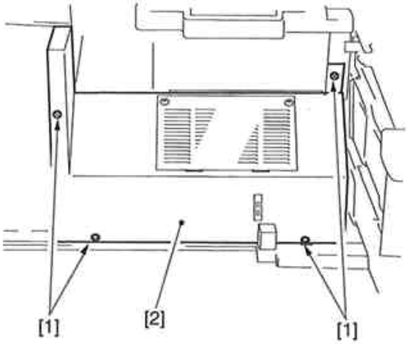


Figure 4-1101-7

2) Disconnect the two connectors [3].

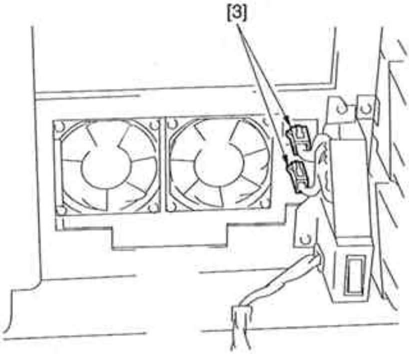


Figure 4-1102-7

3) Remove the rear cover 1/2/3.
4) Disconnect the two connectors, and remove the four screws; then, remove the power supply cooling fan unit.
5) Disconnect all connectors from the DC power supply PCB, and remove the four screws [3]; then, slide out the DC power supply PCB [4].

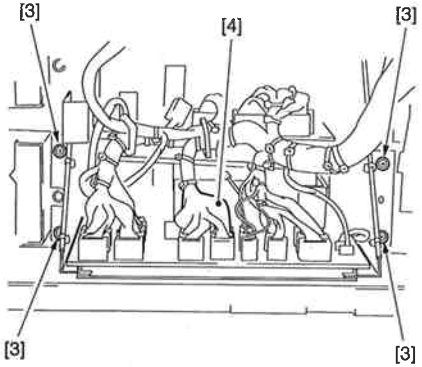


Figure 4-1103-7

8. Removing the Environment Sensor PCB

1) Remove the multifeeder assembly.
2) Disconnect the connector [1], and remove the two PCB supports [2]; then, remove the environment sensor PCB [3].

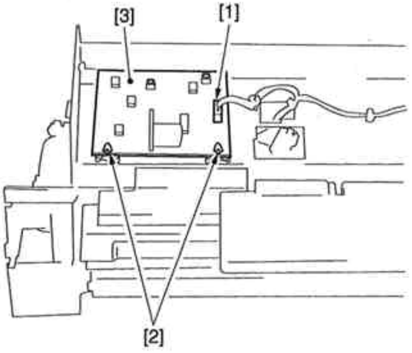


Figure 4-1101-8

9. Removing the Reader Controller

1) Remove the digital cover [4].
2) Remove the four screws [1], and remove the reader controller cover [2].

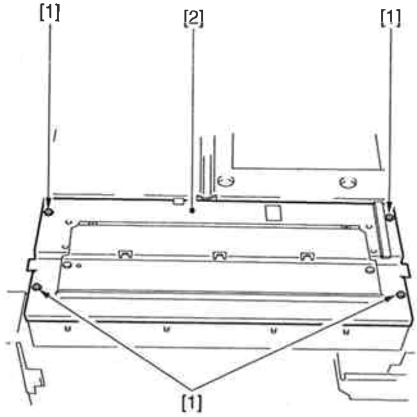


Figure 4-1101-9

3) Disconnect the eight connectors [3], and remove the seven screws [4]; then, remove the reader controller [5].

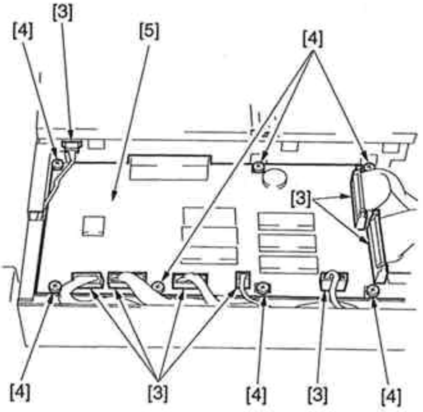


Figure 4-1102-9

10. Removing the ECO Board

1) Remove the reader controller.
2) Disconnect all the connectors from the ECO board, and remove the six screws [1]; then, remove the ECO board [2].

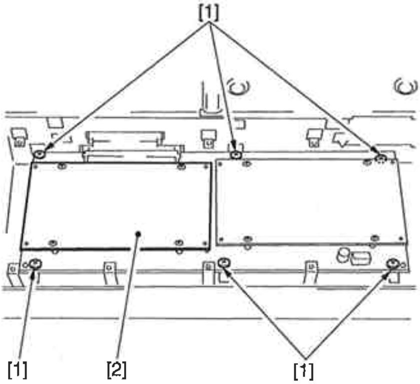


Figure 4-1101-10

11. Removing the Analog Processor

1) Remove the two fixing screws [1], and fix the digital unit [2] in place as indicated.

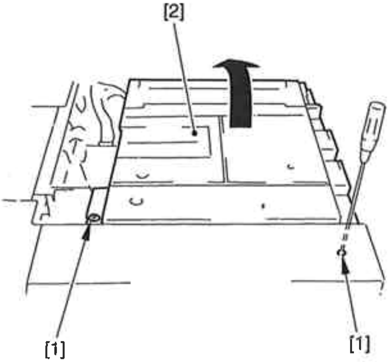


Figure 4-1101-11 (fixing screw position)

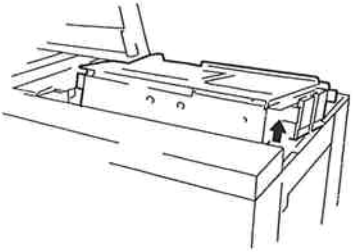


Figure 4-1102-11 (fixing position)

2) Remove the four screws [3], and remove the reader controller cover [4].

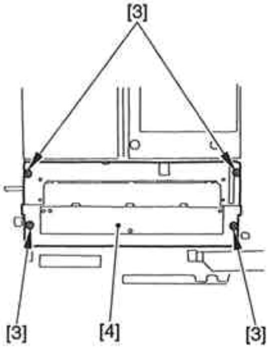


Figure 4-1103-11

3) Remove the two screws [6], and remove the cable retainer [5]; then, disconnect the connector J1453 [7].

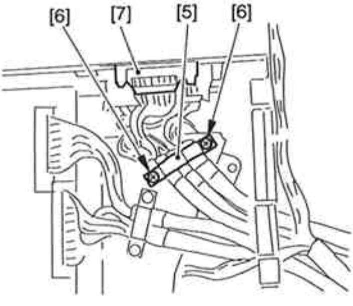


Figure 4-1104-11

4) Disconnect the three connectors [2], and remove the two screws [3]; then, remove the analog processor [4].

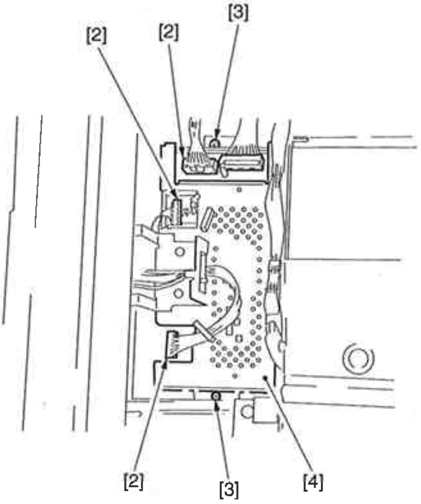


Figure 4-1105-11

12. Removing the Image Processor PCB and the Memory PCB

1) Remove the two fixing screws [1], and fix the digital unit [2] in place as indicated.

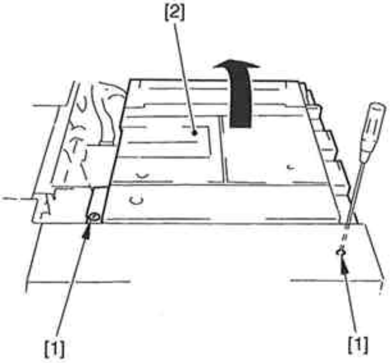


Figure 4-1101-12 (fixing screw position)

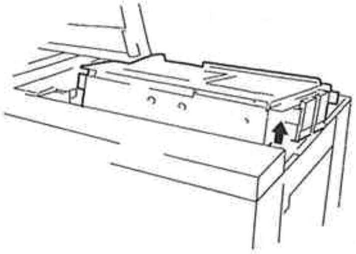


Figure 4-1102-12 (fixing position)

2) Remove the two screws [3], and remove the front cover [4] of the digital set.

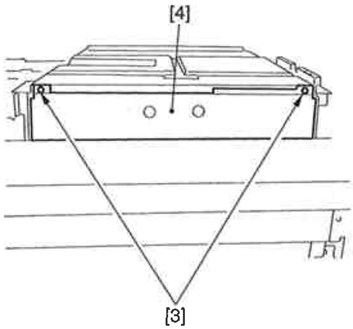


Figure 4-1103-12

3) Disconnect the three connectors [5] each, and remove the two screws [6] each; then, slide out the image processor PCB [7] and the memory PCB [8].

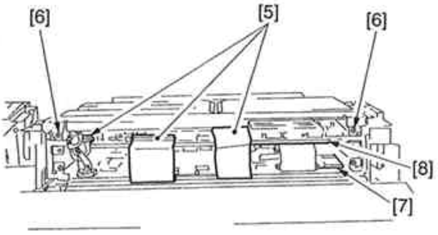


Figure 4-1104-12

13. Removing the Video Controller PCB

1) Fix the digital unit [1] as indicated in Figure 4-1101-13 (See chapter 4. VI. LASER SYSTEM, A-1. Making Preparations for Laser Unit-Related Parts).

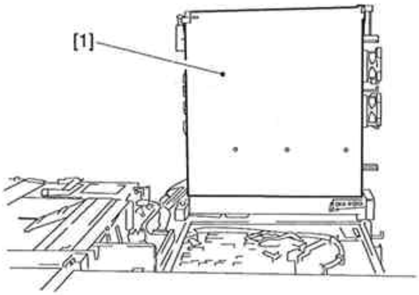


Figure 4-1101-13

2) Remove the three screws [2], and remove the air duct plate [3].

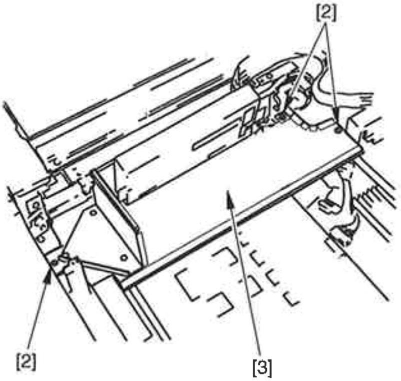


Figure 4-1102-13

3) Disconnect all eleven connectors from the video controller PCB, and remove the four mounting screws [4]; then, remove the video controller PCB [5].

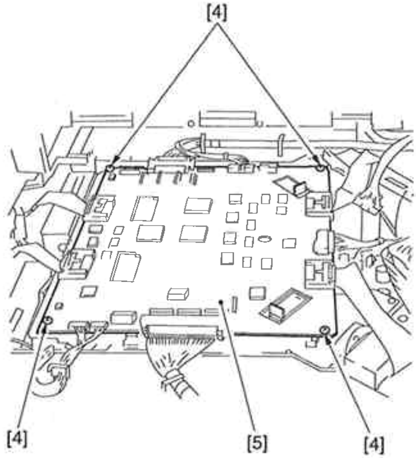


Figure 4-1103-13

14. Removing the Polygon Motor Driver

1) Make preparations for parts associated with the laser unit.
2) Disconnect the four connectors [1], and remove the four screws [2]; then, remove the polygon motor driver [3].

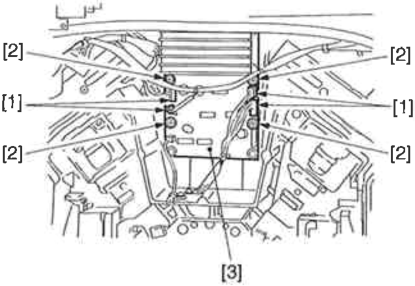


Figure 4-1101-14

15. Removing the Potential Sensor Unit

1) Remove the counter cover and the hopper left cover.
2) Remove the screw [1], and open the potential sensor PCB mount [2] to the front.

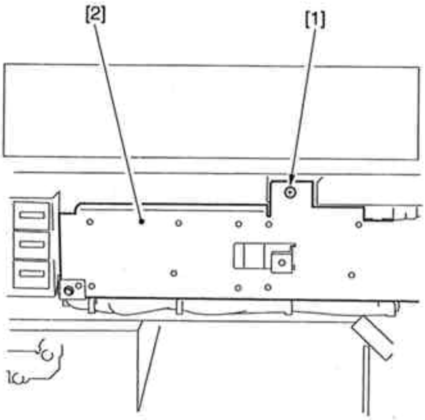


Figure 4-1101-15

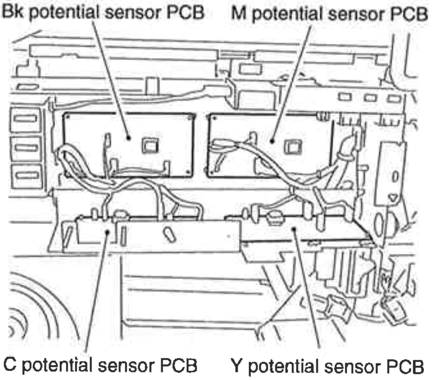

Bk potential sensor PCB
M potential sensor PCB
C potential sensor PCB
Y potential sensor PCB

Figure 4-1102-15

3) Disconnect the four connectors [3], and remove the four PCB supports [4]; then, remove the potential sensor PCB [5].

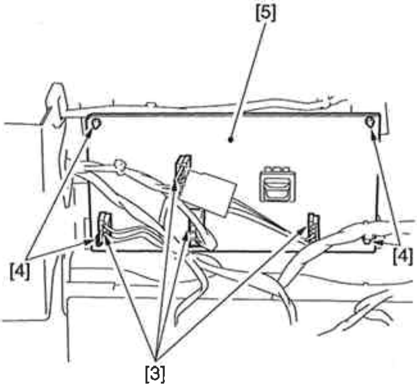


Figure 4-1103-15

4) Draw out the transfer belt unit and the process unit, and place paper [6] on the process unit to protect the photosensitive drum against scratches.
5) Remove the screw [7], and remove the potential sensor unit [8].

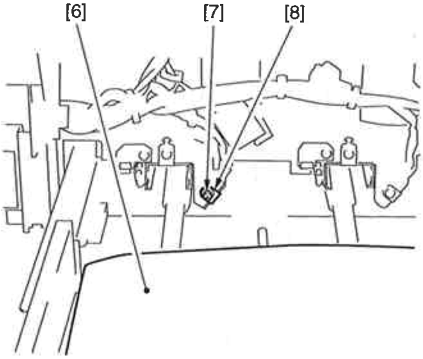


Figure 4-1104-15

When installing the potential sensor unit [8], tighten the screw while butting it against the front side plate [9].

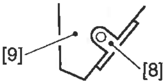


Figure 4-1105-15

16. Removing the Image Position Correction Pattern Reading CCD Unit

1) Remove the hopper left cover.
2) Slide out the separation charging assembly [1], and remove the screw [2] to remove the CCD unit cover [3].

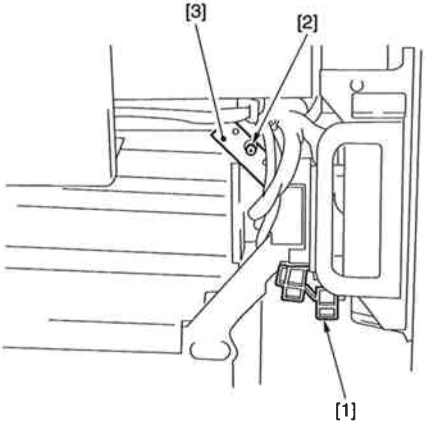


Figure 4-1101-16

3) Slide out the transfer unit.
4) Free the harness [5] from the three wire saddles [4].
5) Remove the screw [7], and remove the cable support plate [6].

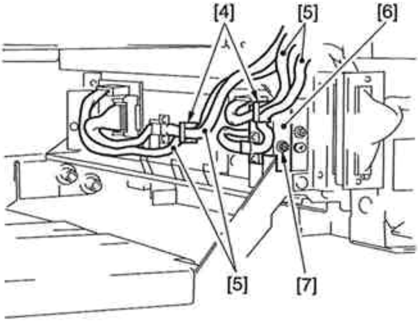


Figure 4-1102-16

6) Disconnect the two connectors [8] from the front.
7) Remove the unit fixing screw [9], and remove the image position correcting CCD unit [10].

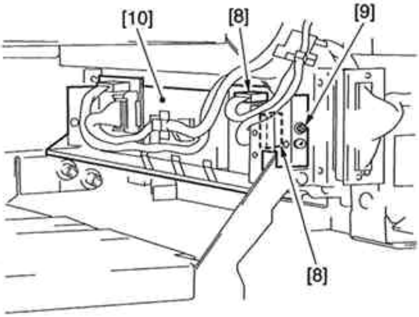


Figure 4-1103-16

8) Remove the two screws [12], and remove the rear cable fixing plate [11].
9) Disconnect the two connectors [13] from the rear.

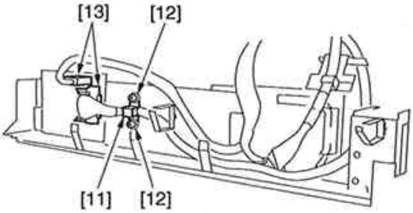


Figure 4-1104-16

⚠ After installing the image position correction CCD unit, execute 'FUNC > INSTALL (2nd screen) > REG-APER (auto adjustment of pattern reading position)'; then, turn off and then on the power to execute image position correction.

17. Cleaning the Shutter

1) Dry wipe the area shown using lint-free paper.

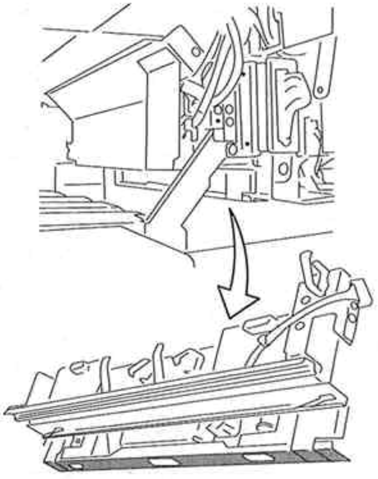


Figure 4-1105-16

⚠ Take care not to peel the end of the plastic sheet shown in the figure.

18. Cleaning the LED

1) Move the shutter where the LED is visible.
2) Dry wipe the LED with lint-free paper.

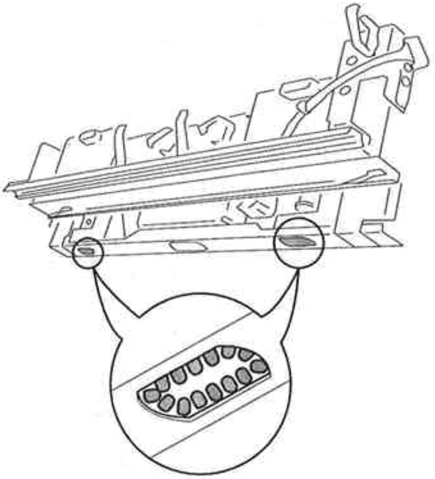


Figure 4-1106-16

2) Move the shutter to the rear.

⚠ Try not to apply excessive force when dry wiping the LED.

19. Removing the Transfer High-Voltage Transformer

1) Open the transfer assembly (See chapter 4. IV. TRANSFER UNIT, A-2. Opening the Transfer Belt Assembly).
2) Remove the screw, and remove the transfer high-voltage transformer insulating cover [2]; then, remove the two screws [3].

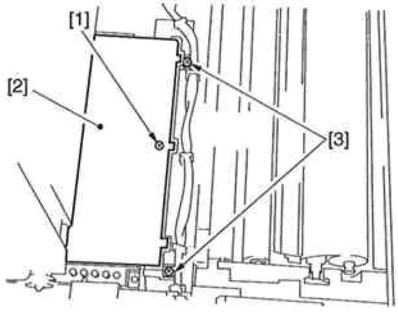


Figure 4-1101-17

3) Disconnect the five connectors [4] from the transfer high-voltage transformer.

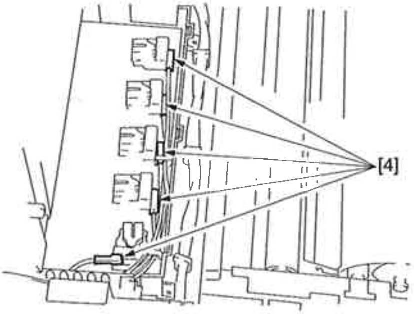


Figure 4-1102-17

4) Slide out the transfer high-voltage transformer [5] to the right; at this time, take care so that the transfer high-voltage transformer will not touch the transfer belt.

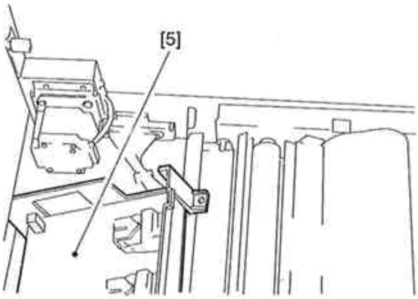


Figure 4-1103-17

5) Disconnect the two connectors [6], and remove the grounding wire [7]; then, remove the transfer high-voltage transformer [5].

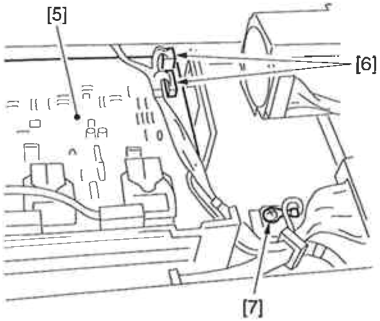


Figure 4-1104-17

CHAPTER 5

INSTALLATION

I. SELECTING THE SITE 5-1

II. INSTALLATION 5-3

- A. Unpacking 5-3
- B. Removing the Fixings, Supplying Fixing Oil, and Changing the Voltage Rating (240V North American Model) 5-5
- C. Supplying Toner 5-7
- D. Supplying Starter 5-15
- E. Preventing Deformation of Externals 5-19
- F. Mounting the Belt Retaining Members 5-20
- G. Mounting the Developing Bias Assembly Protection Member 5-21
- H-1.Installing the Paper Deck for CLC1000 5-24
- H-2.Installing the Paper Deck-H1 5-31
- H-3.Checking the Operation of the Paper Deck.......................................5-33
- I. Checking Images and Operations ...5-35

III. RELOCATING THE MACHINE 5-36

IV. INSTALLING THE ORIGINAL TRAY 5-38

V. INSTALLING THE CONTROL CARD V 5-39

I. SELECTING THE SITE

Select the site of installation with the following considerations in mind; if possible, pay a visit to the user's before delivering the machine.

1. Make sure that the power supply enables exclusive connection to a receptacle rated as follows, and the appropriate terminal of the receptacle is properly grounded for safety:

Mode	Voltage	Amperage	Receptacle
1 North American	208/240 V*	15 A	NEMA 6-20R
2 European	230 V	16A	DIN49440/49441
3 UK	230 V	13 A	BS1363
4 Australian	230 V	15 A	AS

*Set to 208V at time of shipment from the factory; to change to 240V, be sure to use the following voltage modification kit and replace the heater and the wiring.
240V Voltage Modification Kit

Contents:

[1] 230V 650W upper heater	1pcs
[2] 230V 550W lower heater	1pcs
[3] 230V deck heater harness	1pcs
[4] Label	1pcs

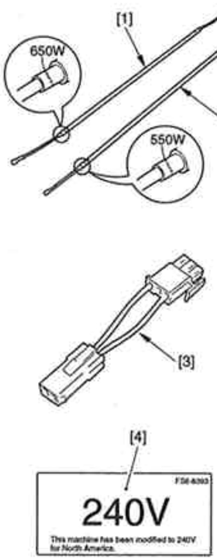


Figure 5-1

2. The temperature and humidity requirements must be as shown in Figure 5-1. Avoid areas near water faucets, water boilers, humidifiers, or refrigerators.

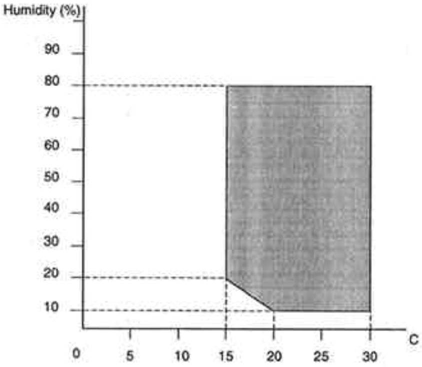


Figure 5-2

3. Avoid areas near sources of fire and areas subject to dust or ammonium gas. Avoid direct rays of the sun; as necessary, provide curtains.
4. The room must be well ventilated.

⚠ The level of ozone emitted by the machine should not harm the health of those around the machine. However, some may find the level unpleasant if the machine is used for a long time in a poorly ventilated room. Make sure the room is ventilated often.

5. The floor must be level so that all feet of the machine are in contact with the floor and the machine remains level.

6. The machine must be installed at least 10 cm away from all walls so as to allow machine operation and maintenance work.

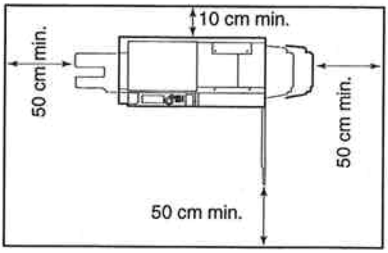

10 cm min.
50 cm min.
50 cm min.
50 cm min.

Figure 5-3

- Make the following spatial considerations for the machine:

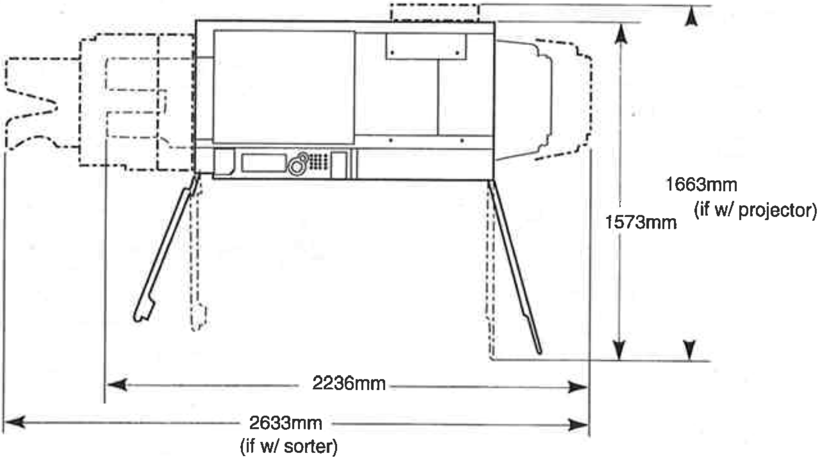

1663mm
(if w/ projector)
1573mm
2236mm
2633mm
(if w/ sorter)

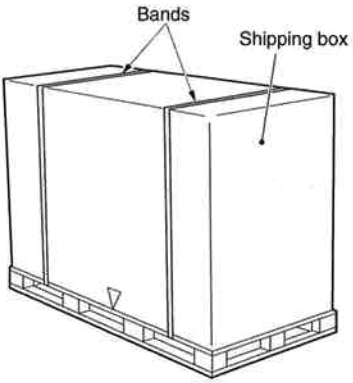
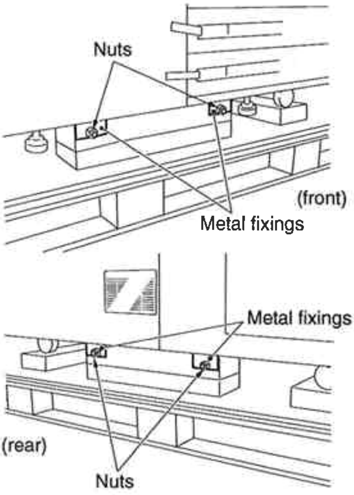
Figure 5-4

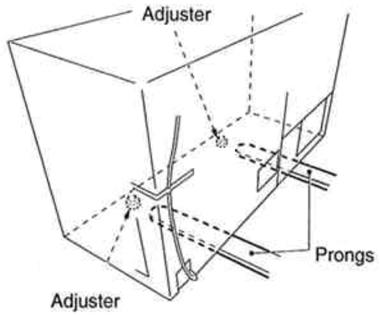
II. INSTALLATION

When a metal object is brought in from a cold to a warm place, droplets of water can develop on its surface. This phenomenon is known as condensation, and copiers subjected to condensation tend to generate faulty images.

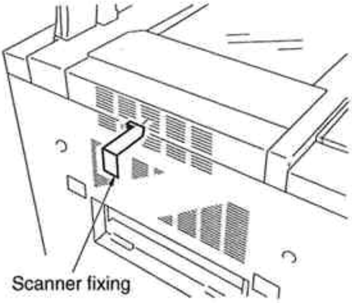
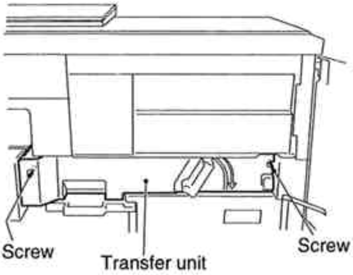
If the copier has been brought in from a cold place, leave it alone at the site of installation for at least one hour before starting the work.

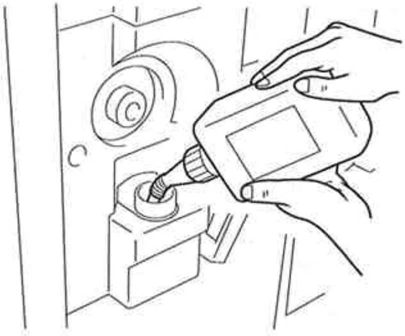
A. Unpacking

Step	Work	Remarks
1	Cut the two bands used to hold the shipping box, and free the shipping box.	
2	Tear off and remove the plastic bag.	
3	Turn the nuts, and remove the metal fixings (2 each at front and rear) used to keep the skids.	 Nuts (front) Metal fixings Metal fixings (rear) Nuts

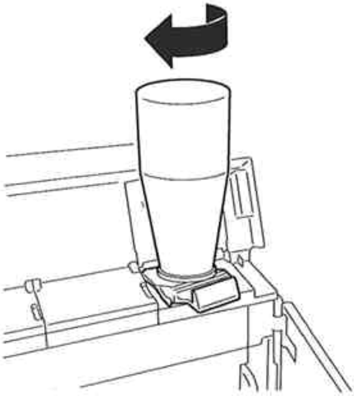
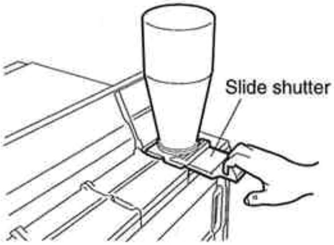
Step	Work	Remarks
4	Lift the machine using a fork lift operating from the rear to move it off the skids and onto the floor. When sliding in the prongs of the fork lift, be sure that the forks stop before they come into contact with the adjusters.	
5	Move the machine to the site of installation. Open the cardboard box, and take out the parts and accessories.	Check to make sure that none of the following is missing: • Copy tray • Control key (2 pcs.) • Operator's Manual • Fixing oil (2 bottles) • Toner (4 colors) • Starter (4 colors) • Oil nozzle • Hopper retaining fixing (2 pcs.) • Process unit grip (2 pcs.) • Laser shutter open tool (2 pcs.) • Starter collecting container (4 pcs.) • Drum protection sheet plastic bag • Transfer unit fixing tool • Storage box

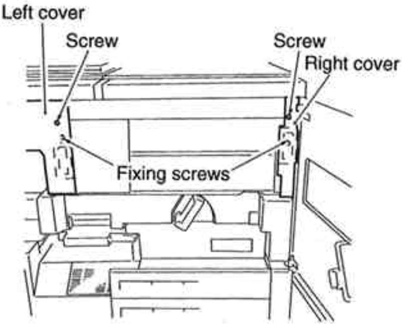
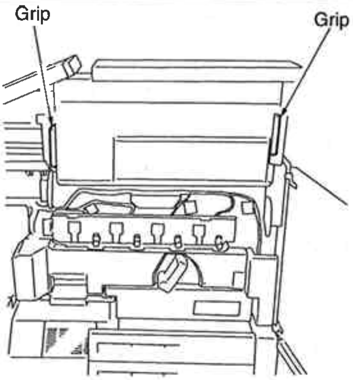
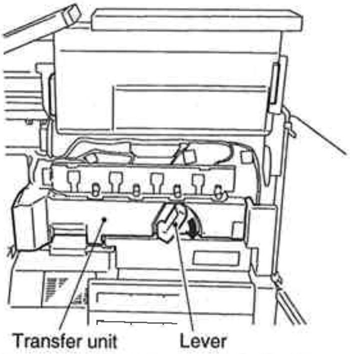
B. Removing the Fixings, Supplying Fixing Oil, and Changing the Voltage Rating (240V North American Model)

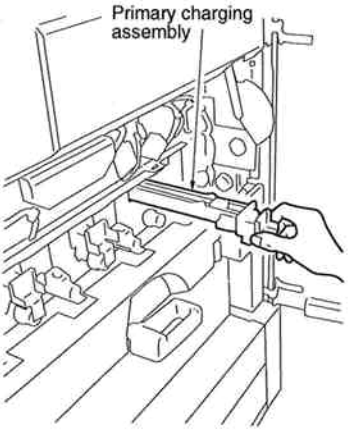
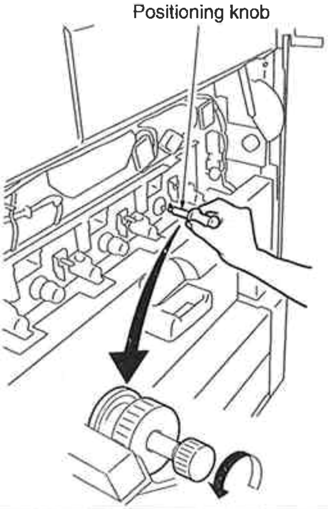
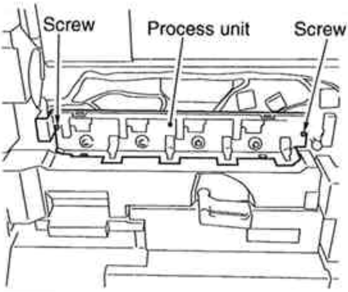
Step	Work	Remarks
1	Take out the M, C, Y, and Bk starter bottles, and shake them well. Open the caps, peel off the seals, and keep them in a dust-free environment.	The step on the left lets the starters become used to the environment of the site.
2	Remove the strips of tape from the parts of the machine and the protection sheet used for the copyboard glass.	 Store away the fixing in the tool box for possible relocation of the machine.
3	Removing the Scanner Fixing Remove the tape from the scanner retaining fixing found on the outside of the left cover; then, slide the metal fixing from the rear to the front, and pull it to the left to remove.	
4	Open the front covers (left, right), and remove the two fixing screws from the transfer unit.	
5	Remove the tape and materials used to keep the lever and others in place.	⚠ However, do NOT remove the seal from the toner supply mouth of the hopper assembly. (Otherwise, toner will be likely to leak during toner supply operation.)
6	Remove the tape and fixing materials from inside the cassette.	
7	Release the lever of the transfer unit, slide out the transfer unit, and remove the tape used to keep the jam removal tweezers and the tap used to keep the transfer belt at the rear. Thereafter, set the transfer unit in place.	

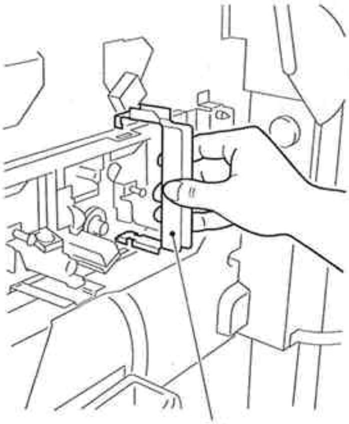
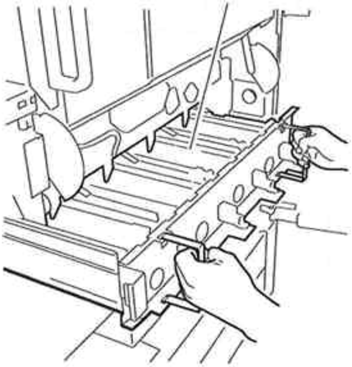
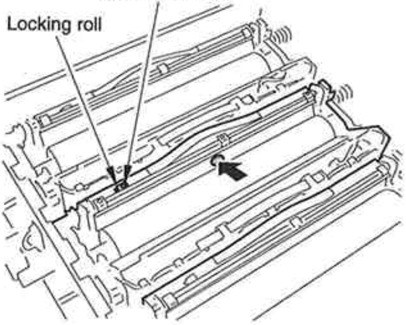
Step	Work	Remarks
8	Remove the cap from the fixing oil tank, and pour two bottles of fixing oil. Then, close the cap.	

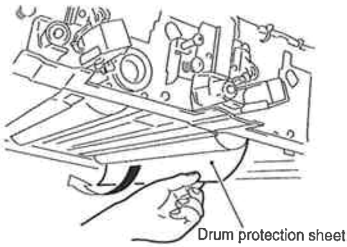
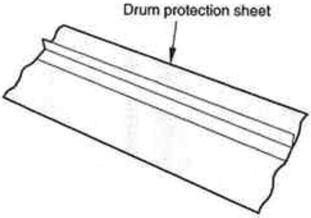
C. Supplying Toner

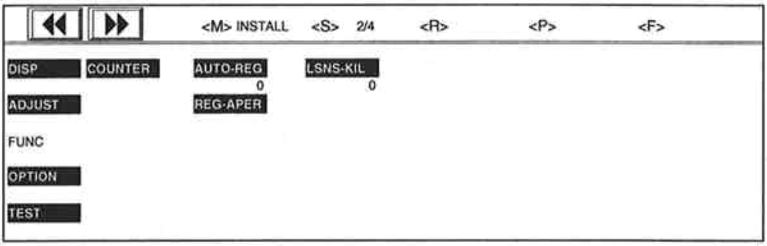
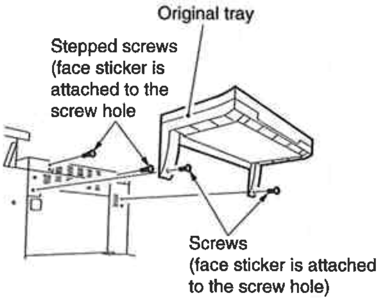
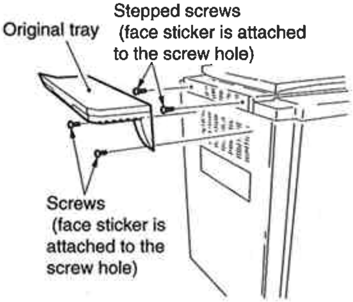
Step	Work	Remarks
1	As if to invert the top and the bottom, shake the Y toner container 20 times or more. ⚠ Do not perform this step until immediately before setting the bottle to the hopper.	
2	Open the lid of the Y toner hopper, and fit the Y toner bottle in the opening of the hopper; hold the base of the bottle, and turn the bottle clockwise until it stops (about 10°).	
3	Pull the slide shutter of the Y toner bottle toward the front, and lightly tap on the bottom and the side of the bottle two to three times. • Take note of the time at which toner supply operation starts. • Check to make sure that the toner has poured into the hopper.	
4	Close the slide shutter of the Y toner bottle, and turn the bottle counterclockwise (about 10°) to remove. Check to make sure no toner remains on the mesh over the inlet to the hopper; otherwise, tap on the hopper until all toner has fallen into the hopper.	

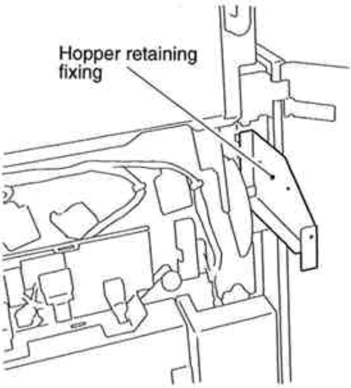
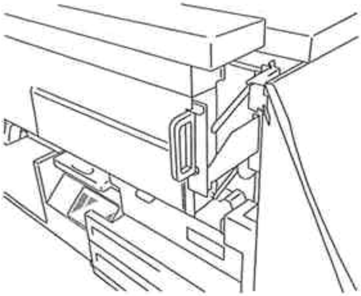
Step	Work	Remarks
5	Perform the same steps for the M, C, and Bk toners as for the Y toner. ⚠ Do not dispose of the toner bottle in fire; it may tear open or explode.	
6	Open the right cover, and remove the hopper assembly right cover and the left cover (1 screw each).	 Left cover Screw Screw Right cover Fixing screws
7	Remove the two fixing screws from the hopper assembly.	
8	Holding both left and right grips, pull the hopper assembly to the front and then lift it. (It will be locked when lifted to the topmost position.) ⚠ Check to make sure that the hopper assembly is securely locked in position by the naked eye.	
9	• Shift down the lever of the transfer unit, and release the transfer belt from the photosensitive drum. • Slide out the transfer unit, and remove the transfer unit cover (2 mounting screws). • Put the transfer unit back into its original position. (Keep the releasing lever released.)	

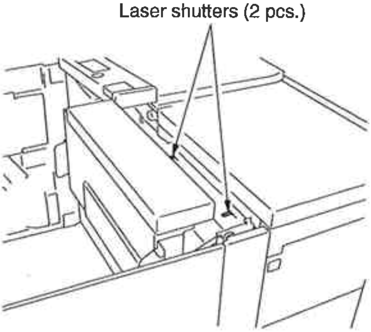
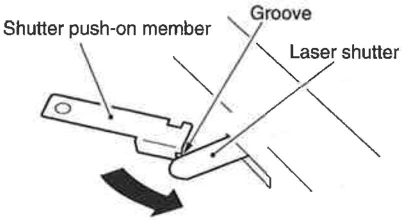
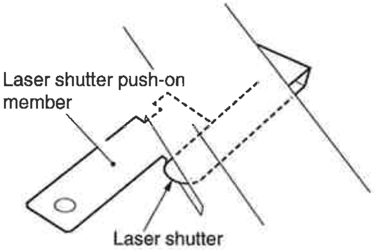
Step	Work	Remarks
10	Remove the four primary charging assemblies. ⚠ After removal, place each primary charging assembly so that its grid side faces up.	 Primary charging assembly
11	Remove the four photosensitive drum positioning knobs. The knobs have a two-layer construction. To remove, turn the small knob at the center counterclockwise.	 Positioning knob
12	Remove the two screws from the process unit.	 Screw Process unit Screw

Step	Work	Remarks
13	Install the two process unit grips that come with the machine.	
14	Slide out the process unit.	
15	Remove the mounting screw, and remove the four photosensitive drum cleaner locking rolls. ⚠ Push the center of the blade (indicated by an arrow) with a finger to release the pressure on the roll. Store away the screw and locking rolls. ⚠ Do not remove the protection sheet from the drum.	

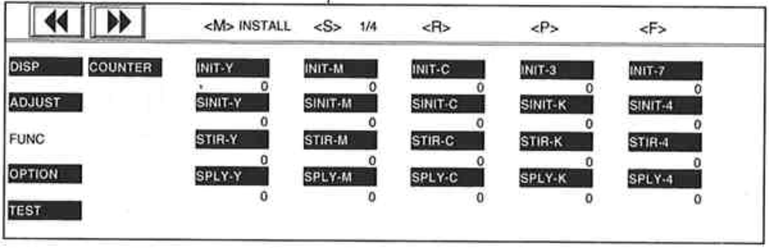
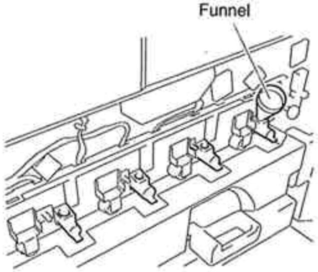
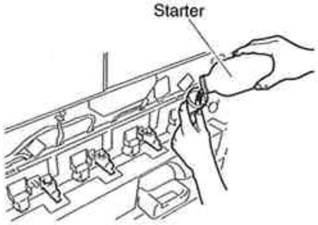
Step	Work	Remarks
16	Put the process unit back into the machine, and remove the grips.	
17	Install the two screws removed in step 12.	
18	Install the photosensitive drum positioning knob.	
19	Install the primary charging assembly. (Be sure to put each charging assembly back to its original location.)	
20	Slide out the transfer unit, and remove the drum protection sheet in the direction of the arrow. Be sure to pull straight down the drum protection sheet. Puling it the front can tear it. Store away the drum protection sheet. **Points to Note about the Drum Protection Sheet** • Do not touch its areas that will come into contact with the drum. • To store, put it in a plastic bag, and keep it protected from dust and oil. • If it must be rolled, be sure that the side that will come into contact with the drum is inside.	 
21	Install the transfer unit cover, and put the transfer unit back into position; then, set (lock) the lever of the transfer unit.	
22	Release the lock to the lower left of the hopper; then, bring down the hopper assembly to the bottom to set it in position.	
23	Insert the cover switch actuator into the cover switch assembly.	
24	Check the power supply, and connect the power plug. Turn on the power switch, insert the control key, and turn it.	
25	Start service mode, and press FUNC .	

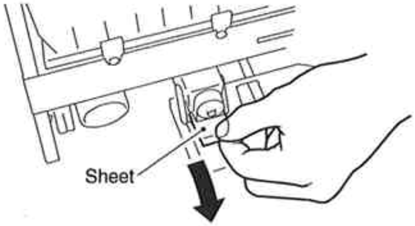
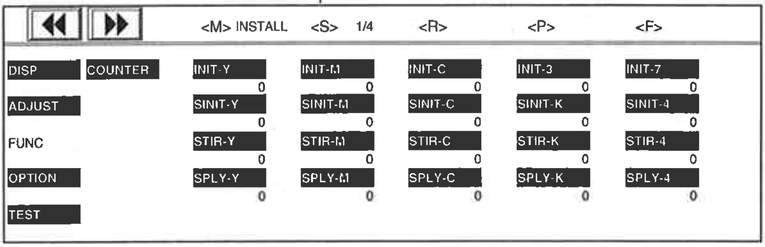
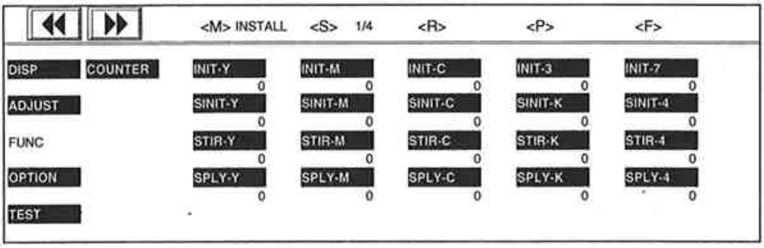
Step	Work	Remarks
26	Press 'INSTALL' twice to select screen 2.  <M> INSTALL <S> 2/4 <R> <P> <F> DISP COUNTER AUTO-REG 0 LSNS-KIL 0 ADJUST REG-APER FUNC OPTION TEST	
27	Press LSNS-KIL to select '1'.	
28	Wait until warm-up ends. During the wait period, perform the following: • Set the cassette size to suit the needs of the user. • First, set the side guide plate to suit the paper size. Then, put paper in the cassette, and adjust the trailing edge guide plate against the trailing edge of the paper. • Remove the cassette size plate from each cassette, and attach the appropriate size label; then, put the cassettes back into their original positions. • Install the original tray. ⚠ If you are installing a paper deck, you must remove the rear right cover. Be sure to install the paper deck before installing the original tray (if on the right side).	 Original tray Stepped screws (face sticker is attached to the screw hole Screws (face sticker is attached to the screw hole)  Original tray Stepped screws (face sticker is attached to the screw hole) Screws (face sticker is attached to the screw hole)
29	Lift the hopper assembly as far up as it goes.	

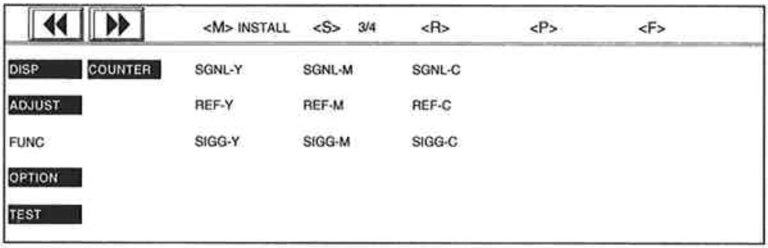
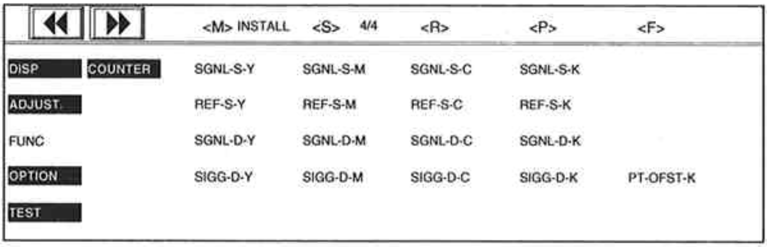
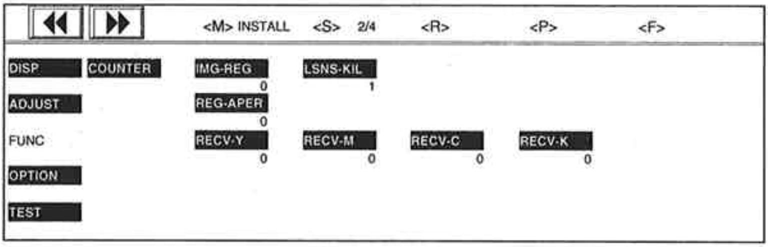
Step	Work	Remarks
30	Install the hopper retaining fixing that comes with the machine (right).	
31	Install the hopper retaining fixing that comes with the machine. (left)	
32	Release the lock of the hopper assembly, and lower the hopper assembly as far down as the metal fixing.	

Step	Work	Remarks
33	Install the two laser shutter opening tools to the two laser shutters.	 Laser shutters (2 pcs.)  Groove Shutter push-on member Laser shutter  Laser shutter push-on member Laser shutter
34	Lift the hopper assembly as far up as it moves, and manually engage the lock found in the lower left of the hopper assembly.	
35	Work as instructed under D. "Supplying Starter."	

D. Supplying Starter

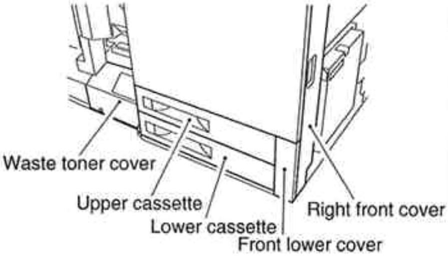
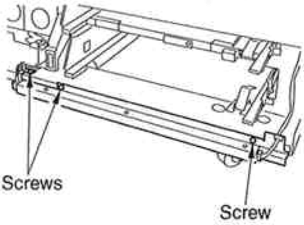
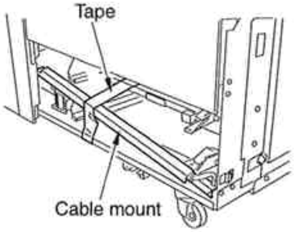
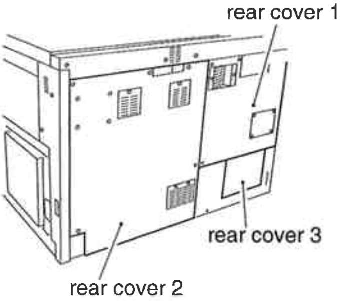
Step	Work	Remarks
1	Return to the 1st screen ('FUNC' > 'INSTALL' in service mode). Press SPLY-Y .  <M> INSTALL <S> 1/4 <R> <P> <F> DISP COUNTER ADJUST FUNC OPTION TEST INIT-Y 0 SINIT-Y 0 STIR-Y 0 SPLY-Y 0 INIT-M 0 SINIT-M 0 STIR-M 0 SPLY-M 0 INIT-C 0 SINIT-C 0 STIR-C 0 SPLY-C 0 INIT-3 0 SINIT-K 0 STIR-K 0 SPLY-K 0 INIT-7 0 SINIT-4 0 STIR-4 0 SPLY-4 0	The screw of the Y developing assembly starts to rotate.
2	Using the funnel attached to the starter bottle, supply the starter through the toner supply mouth of the Y developing assembly. You may tilt the bottle slightly to avoid leakage.	 
3	When done, press the Stop key to stop the operation of the developing assembly.	
4	Repeat steps 1 through 3 for M, C, and Bk. (Press 'SPLY-M', 'SPLY-C', or 'SPLY-K' as necessary to suit each color.)	
5	After supplying all developing assemblies with starters, check to make sure that 10 min or more has passed since the end of toner supply (to the hopper).	

Step	Work	Remarks
6	Install the retaining fixing.	
7	Release the lock of the hopper assembly, and lower the hopper assembly as far down as the hopper assembly retaining fixing; then, remove the sheet from the toner supply mouth (for all colors). Pull it down at an angle to facilitate removal.	
8	Remove the two laser shutter opening tools installed in step 33.	
9	Holding the left and right grips, lift the hopper assembly while pulling it to the front.	
10	Remove the two hopper fixings, and check to make sure that the lock is released; then, set the hopper assembly into place. Thereafter, fix it in place with two fixing screws.	
11	Press **STIR-4** . Wait until stirring ends. (about 1 min)  ◀◀ ▶▶ <M> INSTALL <S> 1/4 <R> <P> <F> DISP COUNTER INIT-Y 0 INIT-M 0 INIT-C 0 INIT-3 0 INIT-7 0 ADJUST SINIT-Y 0 SINIT-M 0 SINIT-C 0 SINIT-K 0 SINIT-4 0 FUNC STIR-Y 0 STIR-M 0 STIR-C 0 STIR-K 0 STIR-4 0 OPTION SPLY-Y 0 SPLY-M 0 SPLY-C 0 SPLY-K 0 SPLY-4 0 TEST	
12	Press **INIT-7** . The initial ATR data will be read. Wait until the operation ends automatically. (about 1 min)  ◀◀ ▶▶ <M> INSTALL <S> 1/4 <R> <P> <F> DISP COUNTER INIT-Y 0 INIT-M 0 INIT-C 0 INIT-3 0 INIT-7 0 ADJUST SINIT-Y 0 SINIT-M 0 SINIT-C 0 SINIT-K 0 SINIT-4 0 FUNC STIR-Y 0 STIR-M 0 STIR-C 0 STIR-K 0 STIR-4 0 OPTION SPLY-Y 0 SPLY-M 0 SPLY-C 0 SPLY-K 0 SPLY-4 0 TEST	

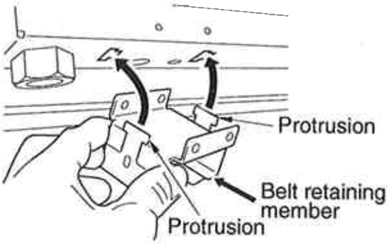
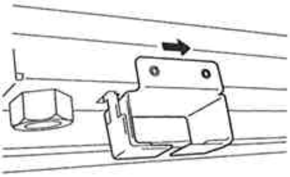
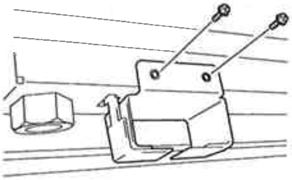
Step	Work	Remarks
13	The initial ATR-related readings will be indicated on the 3rd/4th screen under 'INSTALL'. Record the readings on the service data sheet. (Press the ▶▶ key to scan through the screens.) The service data sheet is attached behind the document compartment of the front cover (left).  ◀◀ ▶▶ <M> INSTALL <S> 3/4 <R> <P> <F> DISP COUNTER ADJUST FUNC OPTION TEST SGNL-Y SGNL-M SGNL-C REF-Y REF-M REF-C SIGG-Y SIGG-M SIGG-C  ◀◀ ▶▶ <M> INSTALL <S> 4/4 <R> <P> <F> DISP COUNTER ADJUST FUNC OPTION TEST SGNL-S-Y SGNL-S-M SGNL-S-C SGNL-S-K REF-S-Y REF-S-M REF-S-C REF-S-K SGNL-D-Y SGNL-D-M SGNL-D-C SGNL-D-K SIGG-D-Y SIGG-D-M SIGG-D-C SIGG-D-K PT-OFST-K	
14	Press the ◀◀ key to bring up the 2nd screen of 'INSTALL'. Press IMG-REG to select '1'.  ◀◀ ▶▶ <M> INSTALL <S> 2/4 <R> <P> <F> DISP COUNTER ADJUST FUNC OPTION TEST IMG-REG 0 LSNS-KIL 1 REG-APER 0 RECV-Y 0 RECV-M 0 RECV-C 0 RECV-K 0	
15	Press REG-APER to execute image position correction. ⚠ Before executing 'REG-APER', check to make sure that the transfer unit is at locking position.	
16	Press the Reset key twice to end service mode.	
17	Pull out the cover switch actuator, and close the front cover.	

Step	Work	Remarks
18	Turn off and then on the power switch, and wait until warm-up ends.	
19	Select 'ADJSUT > PASCAL' in service mode; then, set PASCAL to '1'. Press the Reset key twice to end service mode.	
20	Execute 'auto gradation correction' in user mode. (Pick-up must be from an A3 or B4 cassette; otherwise, feed A3/B4 paper using the multifeeder.)	

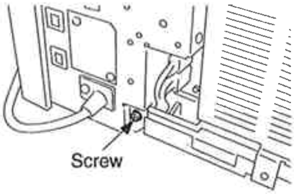
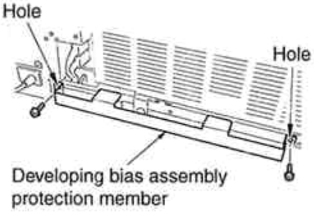
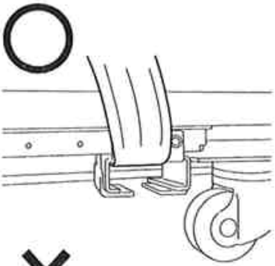
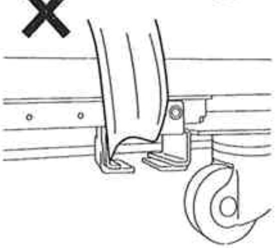
E. Preventing Deformation of Externals

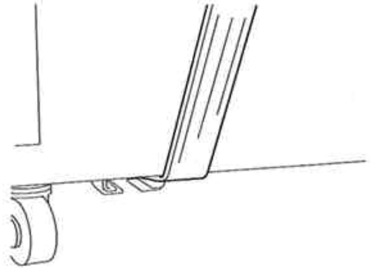
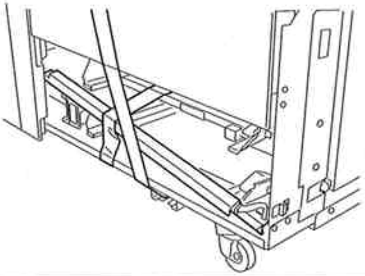
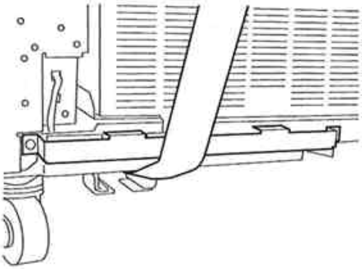
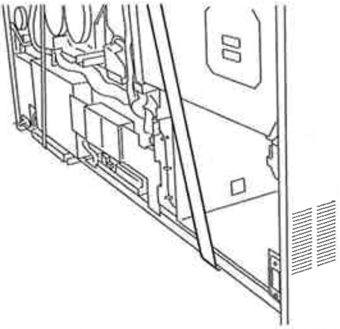
Step	Work	Remarks
1	To protect the externals from deformation, remove the upper cassette, lower cassette, waste toner cover, right front cover, and front lower cover.	 Waste toner cover Upper cassette Lower cassette Right front cover Front lower cover
2	Remove the harness base (cassette lower) secured to the base plate with three screws.	 Screws Screw
3	Attach the harness base temporarily to the cassette holder by means of duct tape or the like.	 Tape Cable mount
4	Detach the rear cover 1, 2, 3 cover.	 rear cover 1 rear cover 3 rear cover 2

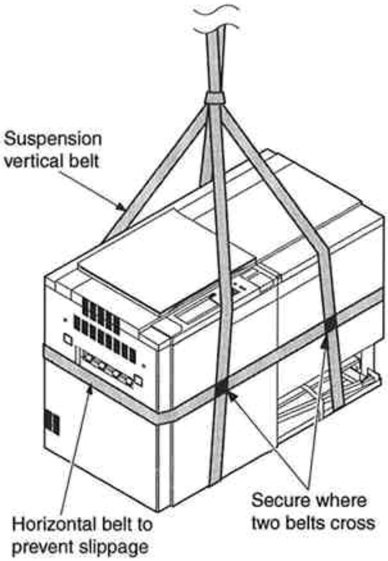
F. Mounting the Belt Retaining Members

Step	Work	Remarks
1	Fit the protrusion of the top of the belt retaining member into the T-shaped opening in the bottom plate of the machine.	
2	Slide the belt retaining member toward the center of the machine so that the 6-mm dia. hole of the belt retaining member and its corresponding 4-mm dia. hole in the bottom plate match.	
3	Using the M4x8 screws used to keep the externals, secure the belt retaining member to the base plate. Be sure to tighten the screws while butting the belt retaining member upward and toward the center of the machine.	
4	Likewise, mount the belt retaining member to the right front, right rear, and left rear.	

G. Mounting the Developing Bias Assembly Protection Member

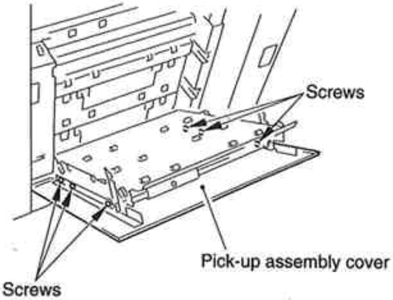
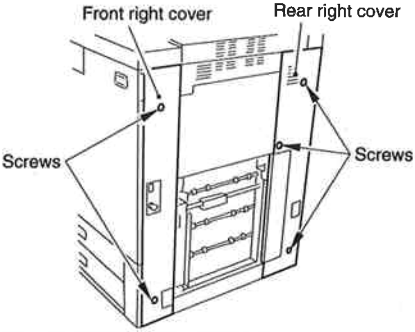
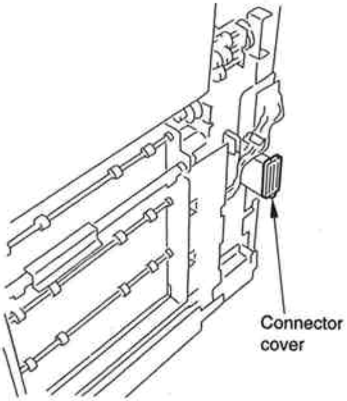
Step	Work	Remarks
1	Remove the M4x8mm screw used to secure the power cord base in place.	
2	Secure the developing bias protection member (left side in the illsutration) to the power cord base using the M4x8mm screw removed in step1 as shown. Using the M4x8mm screw used to hold the rear cover, secure the developing bias assembly protection member to the rear of the base plate.	
3	Lead the belt through the gap of the belt retaining member. Before suspending the machine, apply light tension, and check to make sure that the belt is in contact with the top surface of the retaining member at four points.	○  ✕ 

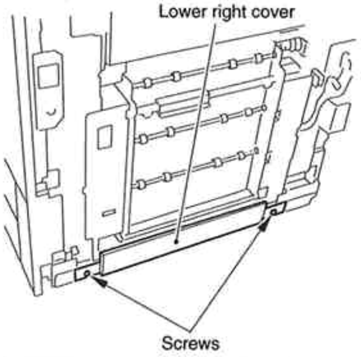
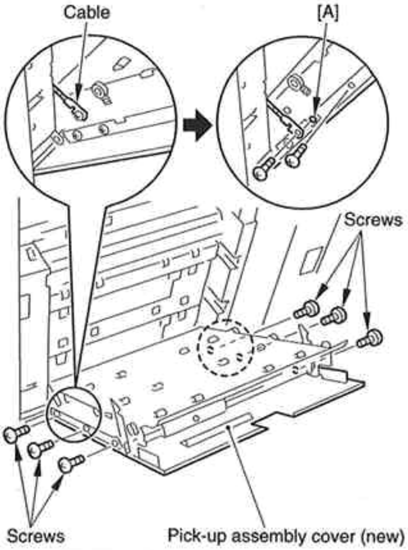
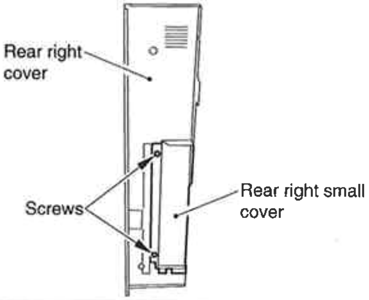
Step	Work	Remarks
4	On the left side, put the belt directly to the left cover. (The left cover will warp when tension is imposed on the belt, but it will recover as soon as the belt is detached.)	
5	On the right side, secure the harness base removed previously by means of duct tape, and put the belt directly on the base plate.	
6	At the right rear, put the belt over the developing bias assembly protection member mounted previously.	
7	At the left rear, put the belt directly on the base plate.	

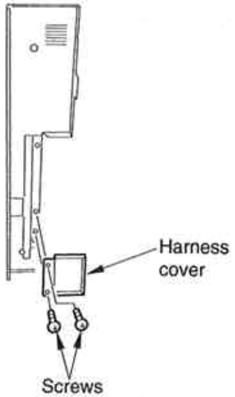
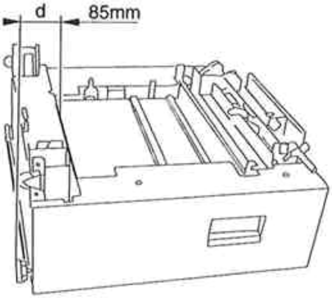
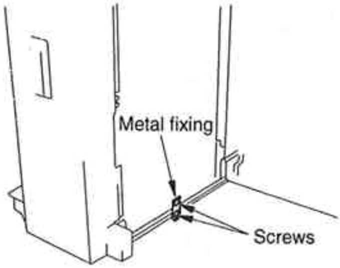
Step	Work	Remarks
8	Be sure to use soft cloth or cushioning material to prevent damage where the belt comes into contact with the machine. Be sure to attach a horizontal belt as shown to keep the machine level and also to prevent the machine from slipping.	 Suspension vertical belt Horizontal belt to prevent slippage Secure where two belts cross

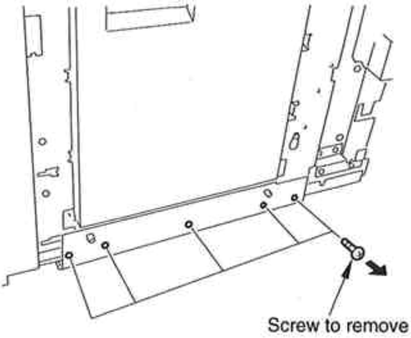
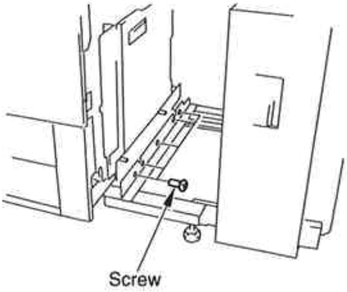
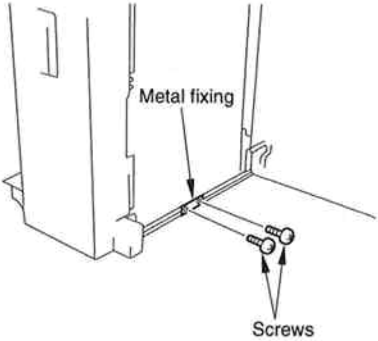
H-1. Installing the Paper Deck for CLC1000

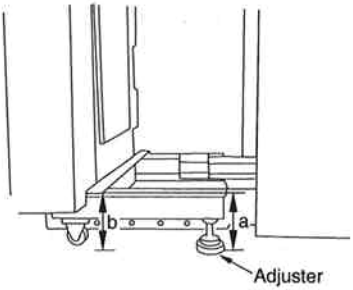
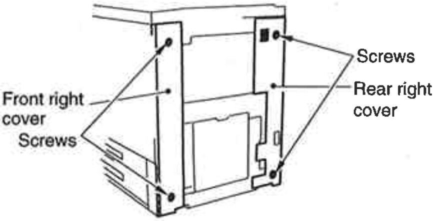
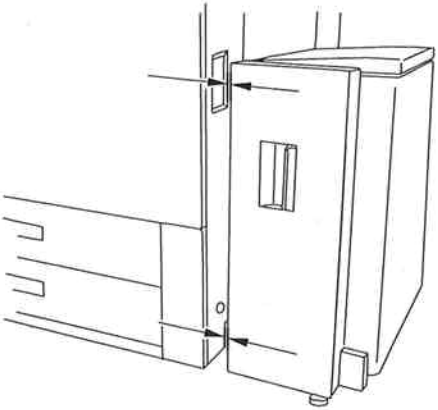
If the paper deck does not come as standard, follow the instructions in the Installation Procedure that comes with the Paper Deck Installation Kit.

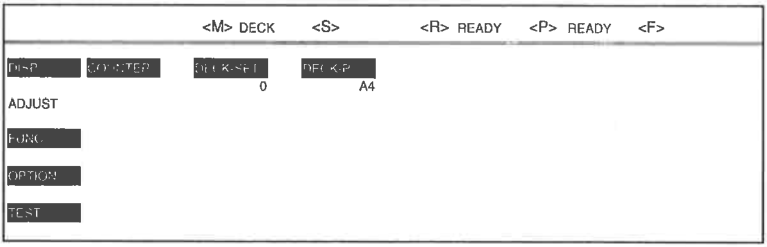
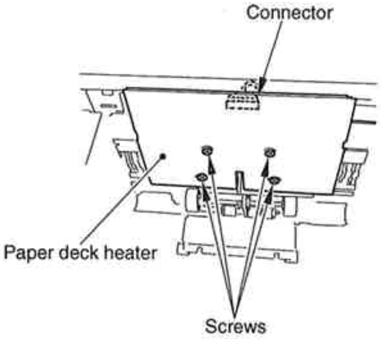
Step	Work	Remarks
1	Turn off the power switch of the copier.	
2	Remove the copier's pick-up assembly cover. (6 mounting screws)	 Screws Pick-up assembly cover Screws
3	Remove the copier's rear right cover (3 mounting screws) and the front right cover (2 mounting screws). (If the control key is inserted, remove it in advance.)	 Front right cover Rear right cover Screws Screws
4	Remove the connector cover.	 Connector cover

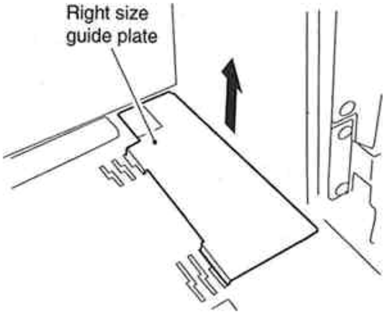
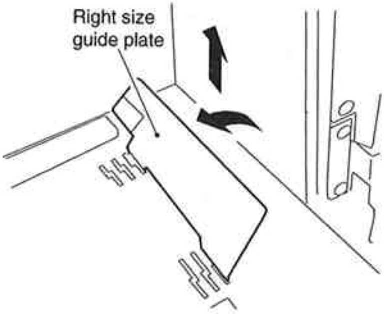
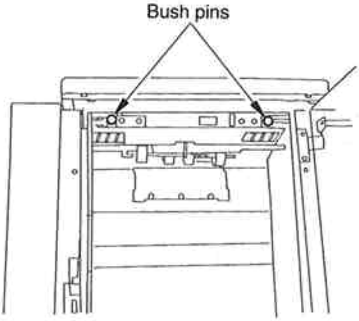
Step	Work	Remarks
5	Remove the lower right cover. (2 mounting screws) • For a non-200V model, skip this step.	 Lower right cover Screws
6	Install the pick-up assembly cover (new). (6 mounting screws) At this time, move the cable to A. • For a non-200V model, skip this step.	 Cable [A] Screws Screws Pick-up assembly cover (new)
7	Remove the rear right small cover from the rear right cover. (2 mounting screws) • For a non-200V model, skip this step.	 Rear right cover Screws Rear right small cover

Step	Work	Remarks
8	Install the harness cover to the rear right cover. (2 mounting screws) • For a non-200V model, skip this step.	
9	Open the cardboard box of the paper deck, and remove the fixing members and the fixing tape. ⚠ As many as five fixing screws for the paper deck are included. Take them out in advance.	
10	Place the paper deck on its side, and turn the paper deck adjuster (1 each at front and rear) so that the distance d is about 85 mm.	
11	Remove the metal fixing. (2 mounting screws)	

Step	Work	Remarks
12	Remove the five screws from the copier. (The screws will not be used.)	
13	Match the cut-off in the paper deck lower frame and the guide pin of the copier; then, install the paper deck to the copier using five screws. (Be sure to use the screws that come with the copier.)	
14	Install the metal fixing where indicated. (2 mounting screws)	

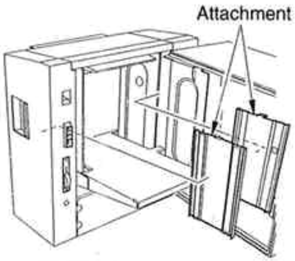
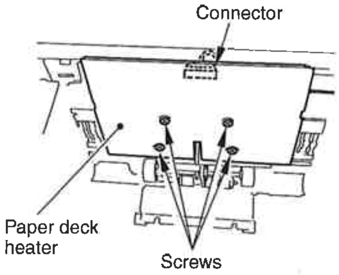
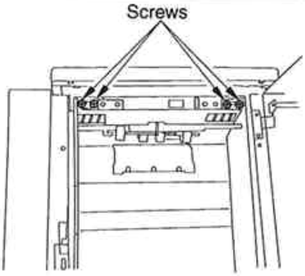
Step	Work	Remarks
15	Slide out the paper deck fully, and turn the adjuster so that the difference in height between a and b is 1 mm or less. (both front and rear)	
16	Install the front right cover and the rear right cover. (2 mounting screws each)	
17	Connect the paper deck assembly to the copier, and check to make sure that the gap between the copier's front right cover and the front cover of the paper deck are parallel, i.e., the difference between the gap top and the gap bottom is 1 mm or less. Make the same check for the copier's rear right cover and the rear cover of the paper deck. If the gap is not as specified, adjust the adjuster.	
18	Check to make sure that connection and disconnection between the copier and the paper deck is smooth; then, connect the connectors.	

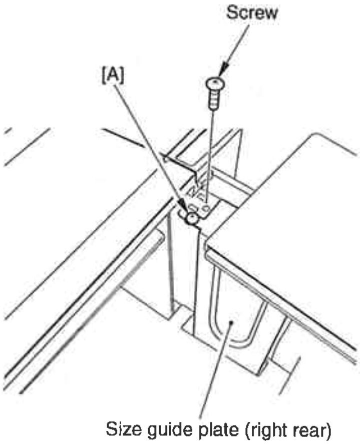
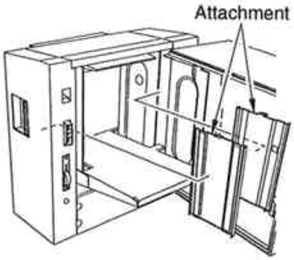
Step	Work	Remarks
19	Provide paper.	
20	Turn on the copier.	
21	Start service mode, and select OPTION > DECK . ADJUST - DECK (page 1)  <M> DECK <S> <R> READY <P> READY <F> DECK-SET 0 DECK-P A4 DISP COUNTER DECK-SET DECK-P ADJUST FUNC OPTION TEST	
22	Enter '1' for DECK-SET Press DECK-P to select the size of the paper used by the user.	
■ If a diffferent paper size is desired, perform the following.		
23	Remove the four screws, and disconnect the connector; then, remove the paper deck heater.	 Connector Paper deck heater Screws

Step	Work	Remarks
24	Lift the right size guide plate while holding it horizontally.	 Right size guide plate
25	Remove the right size guide plate by lifting it to the left at an angle. (Tilt the left size guide plate to the right.)	 Right size guide plate
26	Pull out the bush lock used to fix the side guide plate (rear/front) in place, and move the side guide plate.	
27	Install the paper deck heater.	

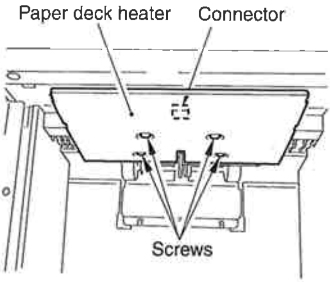
H-2. Installing the Paper Deck-H1

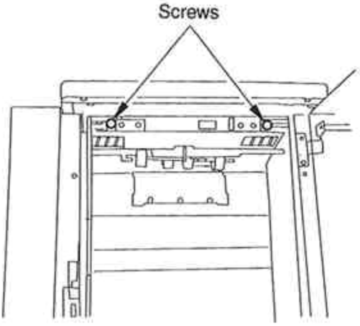
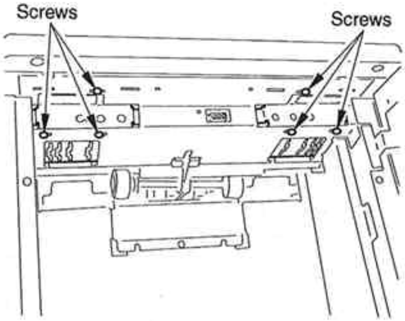
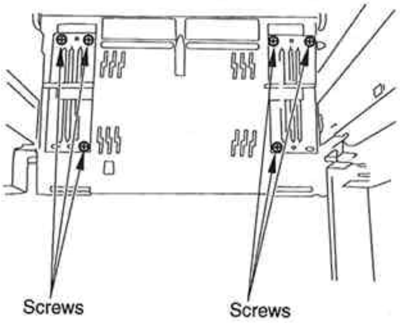
- See "H-1. Installing the Paper Deck" frpm step 1) to 21).

Step	Work	Remarks
22	Enter '2' for **DECK-SET**. Press **DECK-P** to select the size of the paper used by the user.	
■ If a diffferent paper size is desired, perform the following: At time of shipment from the factory, the paper size is set to A3 extra-length or A3 (A4)/11x17 (LTR) with an attachment installed (12x18). • To switch to B4 • To use exclusively for A3/11x17		
23	Open the paper deck cover.	
24	Remove the attachment from the front and the rear of the deck lifter assembly.	
25	Remove the four screws, and disconnect the connector; then, heater.	
26	Remove the four screws used to secure the side guide plates (rear, front) in place; then, shift the side guide plate.	

Step	Work	Remarks
27	Remove the screw used to secure the side guide plate (right, rear); then, shift the side guide plate (right, rear) to suit the new paper size. ⚠ Do not loosen the screw [A] indicated in the figure. • To switch to A3 extra-length/12x18	
28	Open the paper deck cover.	
29	Remove the attachment from the front and the rear of the deck lifter assembly.	

H-3. Checking the Operation of the Paper Deck

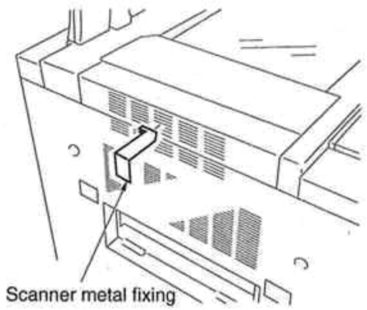
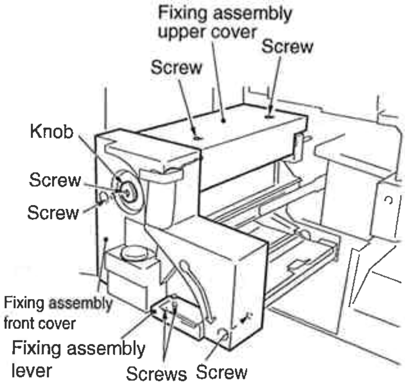
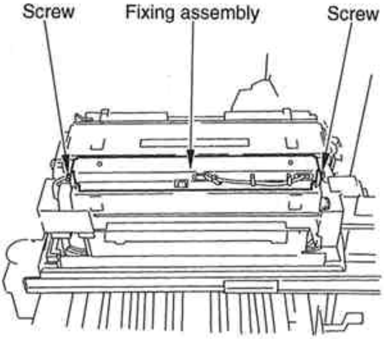
Step	Work	Remarks
1	Wait until the copier completes its warm-up period.	
2	Place paper in the paper deck, and select the paper deck as the source of paper.	
3	Place the Test Sheet on the copyboard, and make copies.	Check to make sure of the following: • There is not abnormal sound. • The lifter operation is normal. • The pickup operation is normal. • The copy image is normal. • The left/right registration of the copy image is normal.
■ Adjusting the Left/Right Registration If the left/right registration when the paper deck is used as the source of paper is not as indicated (2.0 ±1.0 mm), perform the following steps to make adjustments:		
4	Start the copier's service mode, and select 'FEED-ADJ' under 'ADJUST'.	
5	While the FEED ADJ screen is indicated, press the Start key.	
6	Check the left/right registration; then, adjust the image write start position in main scanning direction and the image write start position in sub scanning direction using VSYC-ADJ. Thereafter, adjust the no-image width using MARGN-L/R/T/B.	
■ If the left/right registration is not as indicated after making adjustments in service mode.		
7	Check to make sure that the left/right registration is normal when copies are made using paper from the copier's cassettes.	
8	Remove the four screws, and disconnect the connector; then, detach the paper deck heater.	

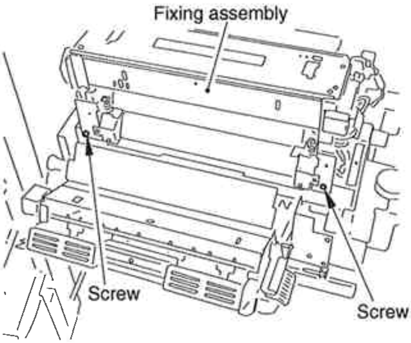
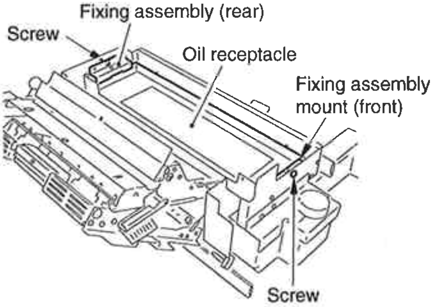
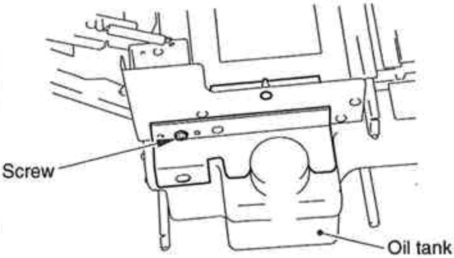
Step	Work	Remarks
9	Remove the two screws used to fix the side guide plate (rear/front) in place, and detach the side guide plate.	
10	Loosen the three adjusting screws each to adjust the upper mounting plate (rear/front) of the side guide plate as specified. ⚠ Take care not to change the paper width.	
11	If the displacement is appreciable, loosen the three adjusting screws each of the lower mounting plate (rear/front) of the side guide plate to make adjustments.	
12	After adjusting the left/right registration, mount the side guide plate and the deck heater.	

I. Checking Images and Operations

Step	Work	Remarks
1	Remove the cover switch actuator, and close the front covers.	
2	Set the cassette size to suit the needs of the user. • First, set the side guide plate to suit the paper size. Then, put paper in the cassette, and adjust the trailing edge guide plate against the trailing edge of the paper.	
3	Remove the cassette size plate from each cassette, and attach the appropriate size label.	
4	Install the cassettes back into their original positions.	Check to make sure that the 'Add Paper' indicator turns off. Press a key on the control panel (other than the Start key) to make sure that operation is normal.
5	Set the CA-1 Test Chart on the copyboard, and make a copy to check the image.	• Make sure there is no abnormal noise. • Check the copy image for each default ratio. • Make sure that the specified number of copies are made normally. • Try each cassette, paper deck, and multifeeder. • If the image is not normal, make adjustments according to the 'Basic Image Adjustment Procedure.'
6	If you have made adjustments, select 'ADJSUT > PASCAL' in service mode, and check that 'PASCAL' is set to '1'. Otherwise, set it to '1'.	
7	Press the Reset key to end service mode.	
8	Execute auto gradation correction in user mode.	
9	Check the external covers for damage and deformation.	
10	Clean up the area around the machine.	
11	Fill out the service sheet.	

III. RELOCATING THE MACHINE

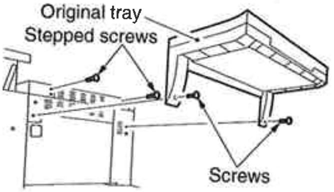
Step	Work	Remarks
1	Tape the cover of the toner hopper in place. Install the scanner metal fixing. • Insert the metal fixing through the louver on the delivery side, and slide it to the rear to fix the scanner mirror mount in position. Tape the metal fixing in place.	 Scanner metal fixing
2	Open the copier's front cover (right/left).	 Fixing assembly upper cover Screw Screw Knob Screw Screw Fixing assembly front cover Fixing assembly lever Screws Screw
3	Release the lever of the fixing unit, and slide out the fixing unit.	
4	Open the external delivery unit and the internal delivery unit; remove the fixing assembly lever (2 screws), fixing assembly knob (1 screw), and fixing assembly front cover (2 screws); then, remove the fixing assembly front cover.	
5	Loosen the two screws, and open the fixing assembly.	
6	Remove the two screws, and open the fixing assembly.	 Screw Fixing assembly Screw
7	Remove the screw from the rear of the upper oil pan; then, wait until all fixing oil has collected in the oil tank.	

Step	Work	Remarks
8	Remove the two screws, and remove the fixing assembly. Be sure to fit the two screws removed in step 6 in advance of this step.	 Fixing assembly Screw Screw
9	Remove the two screws, and remove the fixing assembly mount (front, rear); then, remove the oil receptacle. At this time, take care not to drop the hose attached to the oil receptacle.	 Fixing assembly (rear) Screw Oil receptacle Fixing assembly mount (front) Screw
10	Remove the screw, and remove the oil tank; then, draw out the fixing oil from the oil tank.	 Screw Oil tank
11	Return the fixing unit to its initial position.	
12	Remove the paper deck.	

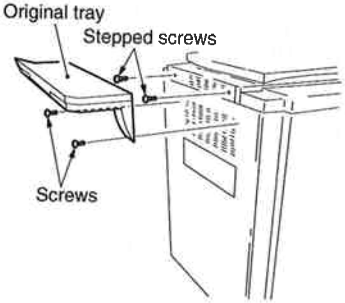
If the route of relocation is not flat and the copier is likely to be subjected to vibration for several minutes, remove the hopper assembly to avoid caking of toner and take precautions to keep the hopper assembly free of vibration. (See the instructions on how to remove the hopper assembly under VII. in Chapter 4.)

IV. INSTALLING THE ORIGINAL TRAY

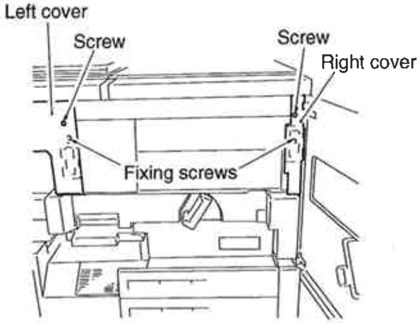
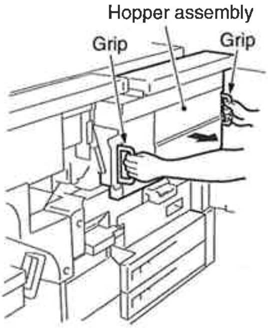
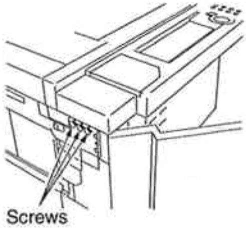
- Installing on the Right

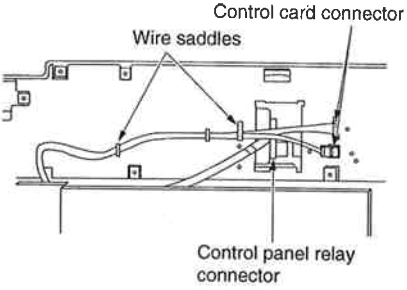
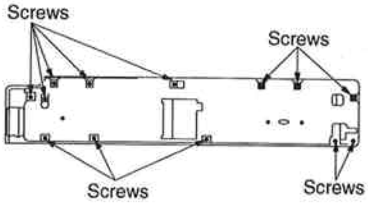
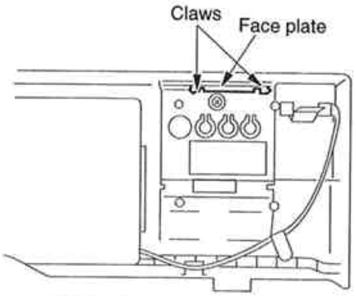
Step	Work	Remarks
1	Peel the four face stickers from the copier's right side, and fit the two stepped screws.	 Original tray Stepped screws Screws
2	Fit the original tray over the stepped screws; then, fix the tray in position with two screws.	

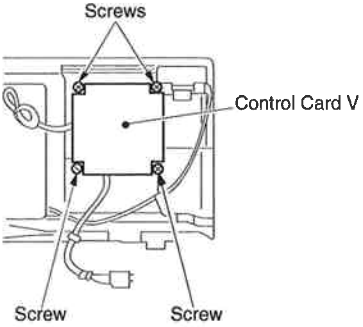
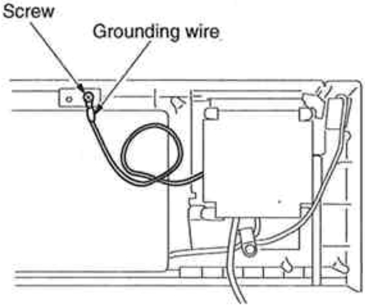
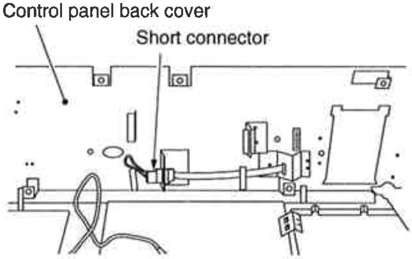
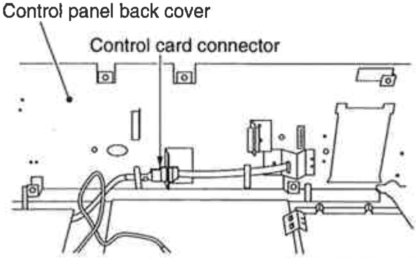
- Installing on the Left

Step	Work	Remarks
1	Peel the four face stickers from the copier's right side, and fit the two stepped screws.	 Original tray Stepped screws Screws
2	Fit the original tray over the stepped screws; then, fix the tray in position with two screws.	

V. INSTALLING THE CONTROL CARD V

Step	Work	Remarks
1	Open the copier's front cover (left, right).	 Left cover Screw Screw Right cover Fixing screws
2	Remove the screw, and remove the hopper assembly right cover.	
3	Remove the screw, and remove the hopper assembly left cover.	
4	Remove the two fixing screws from the hopper assembly.	
5	Holding the right and left grips, pull out the hopper assembly to the front.	 Hopper assembly Grip Grip
6	Remove the copier's left side plate, and remove the three screws used to fix the control panel in place.	

Step	Work	Remarks
7	Remove the control panel relay connector and the two control card connectors; free the harness for the control card from the wire saddles behind the control panel; then, turn over the control panel.	 Control card connector Wire saddles Control panel relay connector
8	Remove the 13 screws, and remove the control panel back cover.	 Screws Screws Screws Screws
9	Remove the mounting screw from the face plate; then, disengage the claw to remove the face plate from the card slot.	 Claws Face plate
10	Install the insulating sheet over the display window for the control card on the control panel.	
11	Peel the protection sheet from the control card.	

Step	Work	Remarks
12	Fix the control card to the control panel using four self-tapping screws. At this time, slide in and out a card, and fix the control card where the card slides in and out easily. Further, check that the printer connector is centered over the hole.	 Screws Control Card V Screw Screw
13	Fix the grounding wire of the control card to the control panel.	 Screw Grounding wire
14	Disconnect the short connector for the control card behind the control panel; then, connect the connector (4P) of the control card.	 Control panel back cover Short connector  Control panel back cover Control card connector

Step	Work	Remarks
15	Peel the protective sheet from the control panel ratings plate of the control card.	
16	Attach the control panel ratings plate of the control card to the control panel.	
17	Fix the back cover to the control panel with 13 screws; then, connect the control relay connector to the control panel.	
18	Fix the control panel relay harness and the relay harness for the control panel in place with the wire saddles on the control panel back cover; then, install the control panel by reversing the steps used to remove it.	
19	Return the hopper assembly back to its original position, and fix it in place; then, install the left and right covers of the hopper assembly, and close the front covers.	
20	Turn on the copier's power switch, and check the operation of the control card.	

CHAPTER 6

MAINTENANCE AND SERVICING

I. PERIODICALLY REPLACED PARTS 6-2

II. CONSUMABLES AND DURABLES 6-5

  A. By the Copier's Hard Counter 6-5

  B. By the Soft Counter in Service Mode (COUNTER) 6-7

III. SCHEDULED SERVICING PROCEDURE 6-8

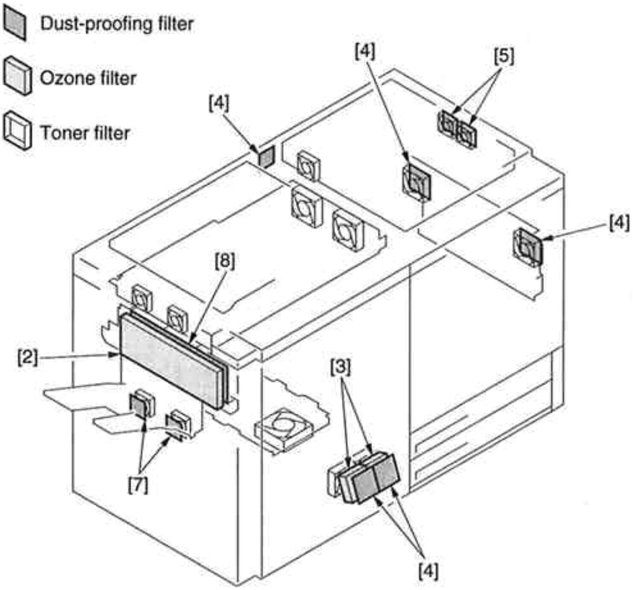
IV. SCHEDULED MAINTENANCE CHART . 6-9

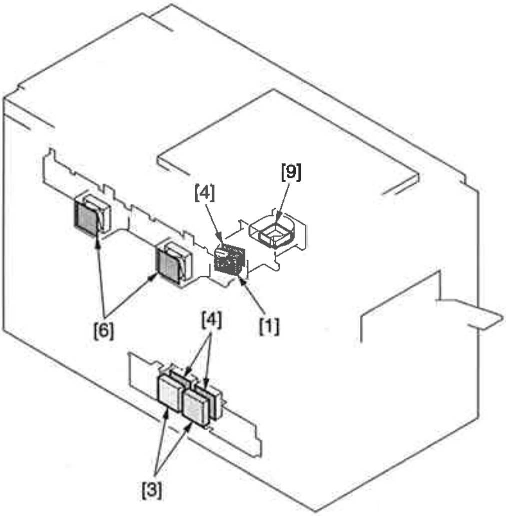
I. PERIODICALLY REPLACED PARTS

As of March, 2001

No.	Parts name	Parts name	Q'ty	Life	Remarks
1	Ozone filter 1 (primary charging assembly)	FB2-3702-000	1	100,000	Or 1 yr. (FM6: primary charging assembly fan)
2	Ozone filter 2 (delivery assembly)	FB2-3703-000	1	100,000	Or 1 yr (FM1/2/3: delivery assembly exhaust fan)
3	Ozone filter 3 (power supply assembly)	FB2-3704-000	4	100,000	Or 1 yr (FM17/18: power supply assembly exhaust fan; PUFM1/2: power supply assembly cooling fan)
4	Dust-proofing filter 1 (laser unit, power supply unit suction filter)	FA6-4538-000	8	100,000	Or 1 yr (FM4/5/6/16/17/18; PUFM1/2)
5	Dust-proofing filter 3 (digital unit suction filter)	FB2-3955-000	2	100,000	Or 1 yr. (FM14/15: digital unit cooling fan)
6	Dust-proofing filter 4 (primary suction filter)	FB3-5608-020	2	100,000	Or 1 yr. (FM8/9: primary charging assembly suction fan)
7	Dust-proofing filter 5 (delivery assembly bottom)	FB3-6319-000	2	100,000	Or 1 yr. (FM19, 20: delivery assembly lower cooling fan)
8	Dust-proofing filter 6 (delivery assembly)	FB3-6320-000	1	100,000	Or 1 yr. (FM1/2/3: delivery assembly exhaust fan)
9	Toner filter	FB2-4383-000	1	100,000	Or 1 yr. (FM6: primary exhaust fan)

The above values are estimates only and are subject to change based on future data.
The parts numbers are subject to change according to engineering revisions.


Dust-proofing filter
Ozone filter
Toner filter
[4]
[4]
[5]
[4]
[8]
[2]
[3]
[7]
[4]


[9]
[4]
[6]
[4]
[1]
[3]

As of March, 2001

No.	Parts name	Parts name	Q'ty	Life*	Remarks
10	Transfer blade	FF5-4191-000	4	100,000	
				90,000	
11	Primary grid	FB2-2958-000	4	25,000	
				22,000	
12	Primary/pre-transfer charging wire	FY3-0030-000	AR	25,000	
				22,000	
		FY3-0040-000	AR	25,000	
				22,000	
13	Primary charging wire cleaning pad (lower)	FF2-3551-000	4	25,000	
				22,000	
	Primary charging wire cleaning pad (upper)	FF2-3552-000	4	25,000	
				22,000	
14	Separation/pre-fixing charging wire	FY3-0030-000	AR	100,000	200V
				90,000	
		FY3-0040-000	AR	100,000	230V
				90,000	
15	Separation/pre-fixing charging wire cleaning pad	FF5-5517-000	2	100,000	
				90,000	
16	Separation/pre-fixing charging assembly gut wire	FA5-1876-000	AR	100,000	
				90,000	
				Life	Remarks
17	Cleaning blade (photosensitive drum cleaner)	FB2-2887-000	4	Upon replacement of photosensitive drum	Or, 1.5 yr
18	Scoop-up sheet (photosensitive drum cleaner)	FB2-2901-000	4	Upon replacement of photosensitive drum	Or, 1.5 yr
19	No. 2 scoop-up sheet (SALT sensor)	FB2-2924-000	4	Upon replacement of photosensitive drum	Or, 1.5 yr
20	Cleaner side seal (front; photosensitive drum cleaner)	FF5-4166-000	4	Upon replacement of photosensitive drum	Or, 1.5 yr
21	Cleaner side seal (rear; photosensitive drum cleaner)	FF5-4167-000	4	Upon replacement of photosensitive drum	Or, 1.5 yr
22	Cleaner end seal(front; photosensitive drum cleaner)	FF5-4164-000	4	Upon replacement of photosensitive drum	Or, 1.5 yr
23	Cleaner end seal (rear; photosensitive drum cleaner)	FF5-4165-000	4	Upon replacement of photosensitive drum	Or, 1.5 yr
24	Belt back surface cleaning member	FF5-4188-000	1	Upon replacement of transfer belt	

* Upper : CLC1000/3100, Lower : CLC1000S

The above values are estimates only and subject to change based on future data. Likewise, the parts numbers are subject to change to accommodate engineering revisions.

II. CONSUMABLES AND DURABLES

A. By the Copier's Hard Counter

As of March, 2001

No.	Parts name	Parts name	Q'ty	Life*	Remarks
1	Fixing oil	FG5-3918-000	2	30,000	2 L (1 L/bottle); as a rule, by the user.
2	Starter developer (Y)	F42-0536	1	40,000 35,000	To be purchased by the user.
3	Starter developer (M)	F42-0526	1	40,000 35,000	To be purchased by the user.
4	Starter developer (C)	F42-0516	1	40,000 35,000	To be purchased by the user.
5	Starter developer (Bk)	F-42-0506	1	40,000 35,000	To be purchased by the user.
6	Upper fixing roller	FB4-6597-000	1	50,000 45,000	
7	Lower fixing roller	FB4-6598-000	1	50,000 45,000	
8	Oil removing roller (transfer belt assembly)	FB3-3228-000	1	50,000	
9	Transfer belt cleaning belt	FB2-3201-000	1	50,000	
10	Transfer belt	FB2-3090-000	1	75,000 70,000	
11	Transfer belt cleaning blade	FB2-2887-000	1	100,000	
12	Upper fixing web	FB3-9463-000	1	100,000	
13	Lower fixing web	FB3-7088-000	1	100,000	
14	Oil applying blade (Fixing assembly)	FB3-9466-000	1	100,000 90,000	
15	Oil applying roller (fixing assembly)	FB2-1143-000	1	100,000 90,000	
16	Oil filter (fixing assembly)	FB2-4114-000	1	100,000	
17	Curl Removing roller (lower)	FG5-8277-000	1	150,000	
18	Fixing heater (upper)	FH7-4434-020	1	200,000	200 V
19		FH7-4436-020	1	200,000	230 V
20	Fixing heater (lower)	FH7-4435-020	1	200,000	200 V
21		FH7-4437-020	1	200,000	230 V

* Upper : CLC1000/3100, Lower : CLC1000S

The above values are estimates only and are subject to change based on future data. The parts numbers are subject to change to reflect engineering revisions.

No.	Parts name	Parts name	Q'ty	Life*	Remarks
22	Oil removing blade (fixing assembly)	FB3-2047-000	1	200,000	
				180,000	
23	Delivery separation claw	FB3-3215-000	4	200,000	
24	Polishing roller (transfer belt assembly)	FB3-4065-000	1	200,000	
25	Primary charging assembly	FG5-4089-020	4	250,000	
				230,000	
26	Developing assembly (Y, M, C)	FG5-8611-000	3	250,000	
				230,000	
27	Developing assembly (Bk)	FG5-8612-000	1	250,000	
				230,000	

* Upper : CLC1000/3100, Lower : CLC1000S

The above values are estimates only and are subject to change based on future data. The parts numbers are subject to change to reflect engineering revisions.

B. By the Soft Counter in Service Mode (COUNTER)

As of March, 2001

No.	Parts name	Parts name	Q'ty	Life*	Remarks
1	Pick-up roller (front; duplexing unit)	FF5-2102-000	1	20,000	• Cassette • Multifeeder • Duplexing unit For each pick-up holder, the actual number of copies made (reading of software counter).
2	Pick-up roller (rear; duplexing unit)	FF5-2101-000	1	20,000	
3	Feeding roller (duplexing unit)	FF5-2103-000	1	20,000	
4	Separation roller (duplexing unit)	FF5-2104-000	1	20,000	
5	Feeding roller 2 (front : duplexing unit)	FF5-2102-000	1	20,000	
6	Feeding roller 2 (rear : duplexing unit)	FF5-2101-000	1	20,000	
7	Feeding roller (duplexing unit)	FF-5743-000	2	100,000	
8	Pick-up roller (front; cassette 1, 2)	FF5-1221-000	2	100,000	
9	Pick-up roller (rear; cassette 1, 2)	FF5-1220-000	2	100,000	
10	Feeding roller (cassette 1, 2)	FB1-7061-000	2	100,000	
11	Separation roller (cassette 1, 2)	FB1-7060-020	2	100,000	
12	Pick-up roller (paper deck)	FF2-5674-020	2	100,000	
13	Feeding roller (B roller; paper deck)	FF2-4785-020	1	100,000	
14	Separation roller (paper deck)	FF2-6312-020	1	100,000	
15	Pick-up roller (multifeeder)	FF5-4327-000	2	50,000	
16	Feeding roller (multifeeder)	FF5-4331-000	1	50,000	
17	Separation roller (multifeeder)	FF2-4710-000	1	50,000	
18	Scanning lamp	FH7-3298-000	1	100,000	

The above values are estimates only and are subject to change based on future data. The parts numbers are subject to change to reflect engineering revisions.

III. SCHEDULED SERVICING PROCEDURE

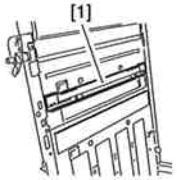
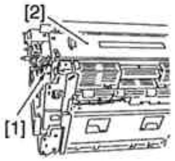
1. As a rule, provide scheduled servicing every 25,000 copies.
2. Before setting out for a visit, check the service record, and take parts expected for replacement.

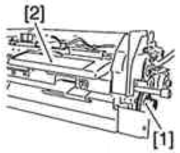
No.	Parts name	Checks	Remarks
1	Meet the person in charge.	Check the general condition.	
2	Record the counter reading.	Check the faulty copies.	
3	Make test copies in Direct, Reduce, and Enlarge.	a. Image density b. Soiling of white background c. Character clarity d. Leading edge margin e. Left/right margin f. Fixing/registration error; soiled back g. Abnormal noise h. Counter operation	Standard: 2.5 ±1.5 mm (Direct) Standard: 2.0 ±1.0 mm (Direct)
4	Provide scheduled servicing (p. 6-9) according to the number of copies made.		
5	Check the waste toner and fixing oil.		Exercise care when sliding out the waste toner box. Excess impact can cause the toner to fly astray inside the machine. If toner flew astray, check the holding tray, pre-holding tray feeding assembly, and pre-fixing assembly feeding assembly for soiling.
6	Clean soiled areas inside the machine.		
7	Make test copies.		
8	Make sample copies.		
9	Arrange the sample copies, and clean up the area around the machine.		
10	Record the latest counter reading.		
11	Fill out the Service Sheet, and report to the person in charge.		
12	Execute automatic gradation correction control in user mode.		

IV. SCHEDULED MAINTENANCE CHART

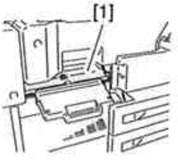
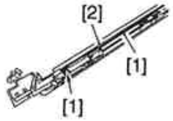
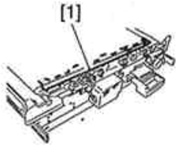
Do not use solvents or oils other than those indicated.
△ : Clean ● : Replace × : Lubricate □ : Adjust

Unit	Parts name	Maintenance				Remarks
		every 25,000	every 50,000	every 100,000	others	
External control	Copyboard glass		△			
	Copyboard sheet		△			
	Ozone filter			●		Or 1 yr.
	Dust-proofing filter			●		Or 1 yr.
	Toner filter			●		Or 1 yr.
Scanner system	Scanner rail				△ ×	When replacing the lamp.
Original exposure system	Dust-proofing glass				△	When replacing the drum.
	Scanner mirror (Nos. 1 through 3)				△	When replacing the lamp.
	Reflecting shade				△	When replacing the lamp.
	Standard white plate				△	When replacing the lamp.
Charging system	Primary/pre-primary charging wire, grid	●				
	Primary charging wire cleaning pad (upper/lower)	●				
	Primary, pre-charging assembly	△				
	Separation, pre-fixing charging assembly					
Photosensitive drum cleaner	Scoop-up sheet				●	When replacing the drum.
	No. 2 scoop-up sheet (SALT sensor)	△			●	When replacing the drum.
	Cleaner side seal				●	When replacing the drum.
	Cleaner end seal				●	When replacing the drum.
	Cleaning blade				●	When replacing the drum.

Unit	Parts name	Maintenance				Remarks
		every 25,000	every 50,000	every 100,000	others	
Transfer system	Transfer blade		△	●		
	Transfer belt drive roller Transfer belt sub roller Transfer belt swing roller				△	When replacing the belt.
	Seam detecting sticker		●			
	Grounding roller				△	When replacing the belt.
	Transfer belt home position sensor				△	When replacing the belt.
	Belt back cleaning material				●	When replacing the belt.  [1] Belt back surface cleaning member
Fixing assembly	Inlet guide plate		△			
	Delivery separation claw		△			
	Thermistor upper				△	When replacing the upper/lower fixing roller.
	Thermistor lower				△	When replacing the upper/lower fixing roller.
	Oil applying blade		△			
	Oil removing blade				△	When replacing the lower fixing roller.
	Upper cleaning belt spring clutch			×		 [1] Upper web spring clutch [2] Fixing assembly

Unit	Parts name	Maintenance				Remarks
		every 25,000	every 50,000	every 100,000	others	
Developing assembly	Developing assembly upper cover*				△	When replacing the drum.
Pick-up/feeding system	Pick-up roller		△			
	Feeding roller		△			
	Separation roller		△			
	Pre-fixing feeding (top face/belt)	△				
	Transfer separation guide	△				
	Registration roller releasing spring clutch				×	Every 500,000 copies.  [1] Registration roller replacing spring clutch [2] Multifeeder assembly

***For instructions on cleaning, see Chapter 4 "Mechanical System".**

Unit	Parts name	Maintenance				Remarks
		every 25,000	every 50,000	every 100,000	others	
Others	Waste toner box		→			Collect every 50,000 copies.
	SALT sensor/shutter*	△			△	At time of replacing drum/developer
	SALT sensor lower plastic sheet*	△			△	At time of replacing drum/developer
	Auto gradation correction				□	At time of replacing drum/developer
	Image position correction CCD unit (shutter assembly/LED assembly)*	△			△	
	Developing assembly lower plastic sheet				△	
	Pre-holding tray feeding assembly					 [1] Holding tray pre-feeding assembly
	Duplexing unit (inside)		△			
	SALT sensor plastic sheet*			△		 [1] SALT sensor plastic sheet [2] SALT sensor
	Transfer unit cover/transfer belt plastic sheet (front)	△				 [1] Transfer belt plastic sheet

***For instructions on cleaning, see Chapter 4 "Mechanical System".**

CHAPTER 7

TROUBLESHOOTING IMAGE FAULTS/MALFUNCTIONS

GUIDE TO TABLES 7-1
I. MAINTENANCE AND SERVICING 7-3
II. STANDARDS AND ADJUSTMENTS 7-7
III. TROUBLESHOOTING IMAGE PROBLEMS 7-52
IV. TROUBLESHOOTING...........................7-88
V. TROUBLESHOOTING FEEDING PROBLEMS 7-140
VI. ARRANGEMENT AND FUNCTION OF ELECTRICAL PARTS 7-149
VII. SERVICE MODE 7-187
VIII. SELF DIAGNOSIS...............................7-296

GUIDE TO TABLES 7-1
I. MAINTENANCE AND SERVICING 7-3
  A. Image Adjustment Basic Procedure 7-3
  B. Scheduled Servicing 7-5
II. STANDARDS AND ADJUSTMENTS 7-7
  A. Image-Related Parts 7-7
    1 Non-Image Width 7-7
    2 Image Margin 7-7
    3 Checking and Adjusting the Non-Image Width and Margin 7-8
  B. Original Illuminating System 7-13
    1 When Replacing the Scanning Lamp, Standard White Plate, the glass retainer left Lamp Regulator, Reflecting Lamp Cover, or Analog Processor PCB 7-13
    2 Routing the Scanner Cable 7-13
  C. Photosensitive Drum-Related Parts . 7-16
    1 Removing the Photosensitive Drum 7-16
    2 Points to Note When Installing the Photosensitive Drum 7-16
    3 Points to Note When Fitting the Drum Drive Belt 7-17
  D. Charging Assembly-Related Parts ... 7-18
    1 Adjusting the Height of the Charging Wire 7-18
    2 Points to Note When Handling the Primary Grid Plate and the Primary Charging Wire 7-18
  E. Developing Assembly-Related Parts 7-19
    1. Replacing the Developer 7-19
    2. When Replacing the Developing Assembly (MCYK) 7-21
    3. When Replacing the Photosensitive Drum 7-22
    4. When Supplying the Hopper with Toner 7-22
  F. Transfer Belt Unit 7-23
    1 Points to Note When Replacing the Transfer Belt 7-23
    2 Initializing the Transfer Belt Swing Control Data 7-23
    3 Adjusting the Tension on the Drive Belt of the Transfer Belt Motor 7-24
    4 Adjusting the Position of the Transfer Belt-Related Solenoid . 7-24
  G. When Replacing the Pick-Up/ Feeding-Related Parts 7-25
    1 Registering the Cassette/ Multifeeder Paper Width Basic Setting (under 'FUNC') 7-25
    2 Orientation of the Pick-Up Roller (cassette pick-up assembly/ duplexing unit pick-up assembly) 7-27
    3 Orientation of the Separation Roller (cassette pick-up assembly/duplexing unit pick-up assembly) 7-27
    4 Orientation of the Feeding Roller (cassette pick-up assembly)/ Duplexing Unit Feeding Roller 1 7-27
    5 Orientation of the Paper Deck Pick-Up Roller 7-28
    6 Orientation of the Paper Deck Pick-Up/Feeding Roller 7-28
    7 Orientation of the Paper Deck Separation Roller 7-28
    8 Adjusting the Position of the Paper Deck Pick-Up Roller Releasing Solenoid (SL8001) ... 7-29
    9 Adjusting the Pressure of the Paper Deck Separation/Feeding Roller 7-29
    10 Orientation of the Feeding Roller 2 (duplexing unit pick-up assembly) 7-30
    11 Adjusting the Pressure of the Separation Roller (cassette pick-up assembly/duplexing unit pick-up assembly) 7-30
    12 Adjusting the Position of the Cassette Pick-Up Roller Releasing Solenoid (SL9, SL10) 7-30
    13 Adjusting the Pressure of the Multifeeder Separation Roller ... 7-31
    14 Adjusting the Position of the Multifeeder Pick-Up Roller Releasing Solenoid (SL5) 7-31
    15 Adjusting the Position of the Duplexing Unit Pick-Up Roller Releasing Solenoid (SL8) 7-31
    16 Adjusting the Position of the Delivery Paper Deflecting Plate Solenoid (SL14) 7-32
    17 Adjusting the Position of the Duplexing Unit Paper Deflecting Plate Solenoid (SL11) 7-32

- 18 Adjusting the Position of the Duplexing Unit Stopper Plate Solenoid (SL12) 7-32
- 19 Adjusting the Position of the Duplexing Unit Stacking Assembly Paper Guide Plate 7-33
- 20 Adjusting the Position of the Duplexing Unit Feeding Roller Solenoid (SL13) 7-33
- 21 Attaching the Timing Belt for the Duplexing Unit Stacking Assembly Paper Guide Plate 7-34
- 22 Adjusting the Position of the Separation Claw Solenoid (SL15) 7-34
- 23 Adjusting the Position of the Upper Fixing Web Take-Up Solenoid (SL3) 7-34
- 24 When Replacing the Registration Roller Unit 7-34
- 25 Correcting Skew Movement (slope of the registration roller unit) 7-35

H. Laser Exposure System 7-36
- 1 When Replacing the Laser Unit 7-36
- 2 When Replacing the Video Controller PCB 7-36
- 3 When Replacing the BD Unit 7-36
- 4 Adjusting the Laser Power 7-36
- 5 Adjusting the Laser Intensity 7-39
- 6 Laser Focus Adjustment 7-40

I. Fixing Assembly-Related Parts 7-41
- 1 Points to Note When Replacing the Fixing Heater 7-41
- 2 Adjusting the Nip (fixing pressure adjusting nut) 7-41

J. Electrical ADJUSTMENT 7-42
- 1 When Replacing Major Parts 7-42
- 2 Checking the Environment Measurement PCB 7-44
- 3 Checking the High Voltage Control System 7-45
- 4 Checking the Photointerrupters 7-47
- 5. Using a Meter 7-47
- 6. Using Service Mode 7-47

III. TROUBLESHOOTING IMAGE PROBLEMS 7-52

A. Initial Checks 7-52
- 1. Checking the Site of Installation 7-52
- 2. Checking the Originals 7-52
- 3. Checking the Copyboard Cover, Copyboard Glass, and Standard White Plate 7-52
- 4. Checking the Charging Assemblies 7-52
- 5. Checking the Developing Assembly 7-52
- 6. Checking the Paper 7-52
- 7. Checking the Periodically Replaced Parts 7-52
- 8. Others 7-53

B. Standard Image 7-53
- 1. Gray Scale 7-53
- 2. Color Patches 7-53
- 3. Photo 7-53
- 4. 3-Color Gradation Scale 7-53
- 5. Halftone Band 7-53
- 6. Fogging 7-54

C. Test Prints 7-56
- 1. Selecting a Test Pattern 7-56
- 2. 256-Color Test Print (PGTYPE=02) 7-57
- 3. 256-Gradation Test Print (PGTYPE=03) 7-58
- 4. 17-Gradation Test Print (PGTYPE=04) 7-59
- 5. Halftone Test Print (PGTYPE=05) 7-60
- 6. Grid Test Print (PGTYPE=06) ... 7-61
- 7. Image Position Correction Pattern (PGTYPE=07) 7-62
- 8. Horizontal Stripe (FF activation) Test Print (PGTYPE=10) 7-63
- 9. Full Color 17-Gradation (YMCBk+RGB+gray) Test Print (PGTYPE=14) 7-64

D. Troubleshooting Image Faults 7-65
- 1 The image is too light (all colors). 7-65
- 2 The image is too light (specific color). 7-65
- 3 The copy has uneven density (vertical). 7-65
- 4 The copy has uneven density (horizontal). 7-67
- 5 The copy has fogging. 7-68
- 6 The copy has vertical streaks/ vertical lines. 7-68
- 7 The copy has white streaks/white lines (vertical). 7-72
- 8 The copy has horizontal streaks/ horizontal fogging. 7-75
- 9 The copy has white spots (horizontal). 7-77
- 10 The copy has white spots. 7-78

11 The copy has white spots (trailing center). 7-79
12 The copy has white spots (meandering). 7-80
13 The copy has a soiled image or soiled back. 7-80
14 The copy has poor fixing. 7-82
15 The copy has bleeding toner (during fixing). 7-83
16 The copy is blank. 7-84
17 The copy is solid black. 7-85
18 The copy has color displacement. 7-87

IV. TROUBLESHOOTING 7-88
A. Troubleshooting Malfunctions 7-88
1 E000/E004 7-88
2 E005..7-90
3 E006..7-90
4 E008..7-91
5 E012..7-92
6 E013..7-93
7 E014..7-95
8 E015..7-96
9 E017..7-97
10 E018..7-97
11 E020..7-98
12 E023......................................7-103
13 E030......................................7-103
14 E040......................................7-104
15 E041......................................7-106
16 E050......................................7-107
17 E061......................................7-108
18 E062......................................7-110
19 E070......................................7-111
20 E072......................................7-112
21 E073......................................7-113
22 E074......................................7-113
23 E075......................................7-114
24 E100......................................7-115
25 E110......................................7-116
26 E194......................................7-117
27 E208......................................7-120
28 E220......................................7-120
29 E350/E352 7-120
30 E351......................................7-121
31 E620......................................7-121
32 E633......................................7-122
33 E700......................................7-123
34 E800......................................7-123
35 AC power is absent. 7-124
36 DC power is absent. 7-125
37 The scanner fails to move forward/in reverse. 7-126
38 The scanning lamp fails to turn ON. 7-12
39 The lifter fails to move up (pick-up from the cassette). 7-128
40 Pick-up fails (cassette 1). 7-129
41 Pick-up fails (cassette 2). 7-130
42 The multifeeder fails to pick up paper. 7-131
43 The registration roller fails to rotate. 7-131
44 Retention fails. 7-132
45 The pre-exposure lamp fails to turn ON. 7-133
46 The fixing heater fails to turn ON. 7-134
47 The drum heater fails to rotate.7-136
48 The counter fails to operate. 7-137
49 The cassette heater fails to operate. 7-138
50 Abnormal noise is heard. 7-139

V. TROUBLESHOOTING FEEDING PROBLEMS 7-140
A. Jams.......................................7-140
1 Pick-Up Assembly 7-142
2 Pick-up Feeding Assembly 7-143
3 Transfer Unit Assembly 7-144
4 Separation/Pre-Fixing Feeding Assembly...............................7-144
5 Fixing/Delivery Assembly 7-145
6 Delivery Vertical Path, Duplexing Reversing Assembly, and Holding Tray Front Feeding Assembly...............................7-146
7 Duplexing Unit Stacking Assembly, Re-Pick-Up Assembly...............................7-147
B. Feeding Faults..............................7-148
1 Double Feeding 7-148
2 Wrinkles 7-148

VI. ARRANGEMENT AND FUNCTION OF ELECTRICAL PARTS 7-149
A. Sensors 7-150
B. Lamps, Switches, Thermistors, and Heaters.................................7-156
C. Clutches 7-160
D. Solenoids 7-162
E. Fans 7-164
F. Motors 7-166
G. PCBs 7-168
H. Variable Resistors (VR), Light-Emitting Diodes (LED), and Check Pins by PCB 7-170
1. DC Controller PCB 7-170

2. Video Controller PCB 7-171
3. Reader Control PCB...............7-172
4. Image Processor PCB............7-173
5. IP Memory PCB 7-173
6. Analog Processor PCB...........7-174
7. Transfer Belt Motor Driver PCB..7-175
8. AC Driver PCB 7-175
9. Scanner Motor Driver PCB 7-176
10. Laser Driver PCB 7-176
11. IP-ECO PCB 7-178
12. Lamp Regulator PCB 7-178
13. Environment Sensor PCB.......7-179
14. HVT1 7-179
15. HVT2.....................................7-180
16. HVT3.....................................7-182
17. HVT4.....................................7-183
18. HVT5.....................................7-183
19. ED board A1 7-184
20. Interface board B1 7-185
21. Preview monitor board...........7-186

VII. SERVICE MODE 7-187
A. Outline 7-187
1. Starting and Selecting Service Mode 7-187
2. Ending Service Mode 7-187
3. RAM Backup 7-188
4. Basic Operations....................7-190
B. Control Display Mode (DISPLAY) ..7-191
1. Version (ROM version) 7-192
2. ACC-STS (status of option) 7-194
3. ANALOG (measurement by analog sensor) 7-195
4. DENS (developer density) 7-196
5. EPOT (photosensitive drum surface potential control data) 7-199
6. SHD/BOF (shading/black offset data) 7-200
7. SENSOR (sensor/DC controller input port).............................7-201
8. Jam/E Code 7-217
9. PRJ-INF (state of the projector)... 7-220
10. RF-INF (RDF state)................7-221
11. SORT-INF (SORT state).........7-222
12. BLT-DRFT (belt swing data display)..................................7-223
C. ADJUST (adjustment) 7-225
1. ADJ-XY (image read start position adjustment) 7-226
2. DOC-REC (original detection area/slice level) 7-228
3. PROJ (projector area adjustment) 7-229
4. ED/RDF (editor/RDF adjustment) 7-231
5. V-CONT (photosensitive drum surface potential contrast adjustment) 7-234
6. COL-ADJ (user color balance adjustment correction)............7-235
7. PASCAL (auto gradation correction control) 7-236
8. ADJ-MISC 7-238
9. FEED-ADJ (image position adjustment) 7-240
10. ENV-SET (setting operation conditions for the cassette heater) 7-242
11. HV-TR (transfer high-voltage output adjustment by condition)..........................7-243
12. HV-SP (separation high-voltage output fine-adjustment by condition)..........................7-245
13. HV-FS (fine-adjustment for pre-fixing high-voltage output according to conditions) 7-247
14. HV-EL (fine-adjustment for internal static eliminator high-voltage output according to conditions).........................7-249
D. FUNCTION (function/inspection)....7-251
1. INSTALL (at time of installation) 7-252
2. R-CON (reader controller PCB-related adjustment) 7-256
3. DC-CON (DC controller PCB-related adjustment) 7-257
4. CCD (CCD-related adjustment) 7-262
5. PRJ-ADJ (projector adjustment) 7-264
6. LASER (laser adjustment) 7-265
7. P-UP-TMG (pick-up timing adjustment) 7-266
8. ATTRACT (retention position adjustment) 7-267
9. EPC (photosensitive drum potential measurement)..........7-268
10. BLADE (transfer blade/transfer belt cleaning blade operation) .7-269
11. FUSER (fixing assembly-related adjustment).................7-270
12. CST-AD (cassette paper width adjustment) 7-271
13. F-MISCs (reader-related operation/inspection) 7-272

    - 14. F-MISCp (printer-related operation/inspection) 7-274
    - 15. TCLN (polishing roller/oil removing roller operation) 7-282
    - 16. P-THICK (paper thickness sensor adjustment) 7-283
    - 17. IMG-REG (image position correction control) 7-284
  - E. OPTION (options mode) 7-286
    - 1. R-OPT (reader-related machine settings) 7-287
    - 2. P-OPT (cleaning mode) 7-289
    - 3. REMOTE (machine settings with IPU in use) 7-290
    - 4. DECK settings for the Paper Deck 7-291
    - 5. DATA-CON (disconnecting the Copy Data Controller-A1) 7-291
    - F. TEST PRINT (test print) 7-292
  - G. COUNTER (counter) 7-294
- VIII. SELF DIAGNOSIS 7-296

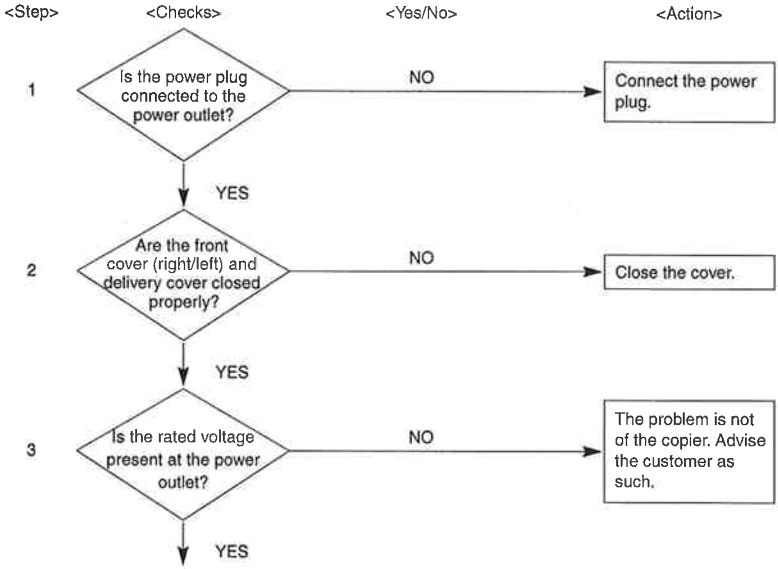
Guide To Tables

In this chapter, work procedures are given in the form of tables instead of flow charts used generally. Familiarize yourself by studying the example below.

EX. AC power is absent.

Cause	Step	Checks	Yes/No	Action
Power plug	1	Is the power plug connected to the power outlet?	NO	Connect the power plug
Covers	2	Are the front cover and delivery cover closed properly?	NO	Close the cover
Power source	3	Is the rated voltage present at the power outlet?	NO	The problem is not of the copier. Advise the customer as such.
	4	Is the rated voltage present between J1-1 and -2 (near cord plate)?	YES	Go to step 6.

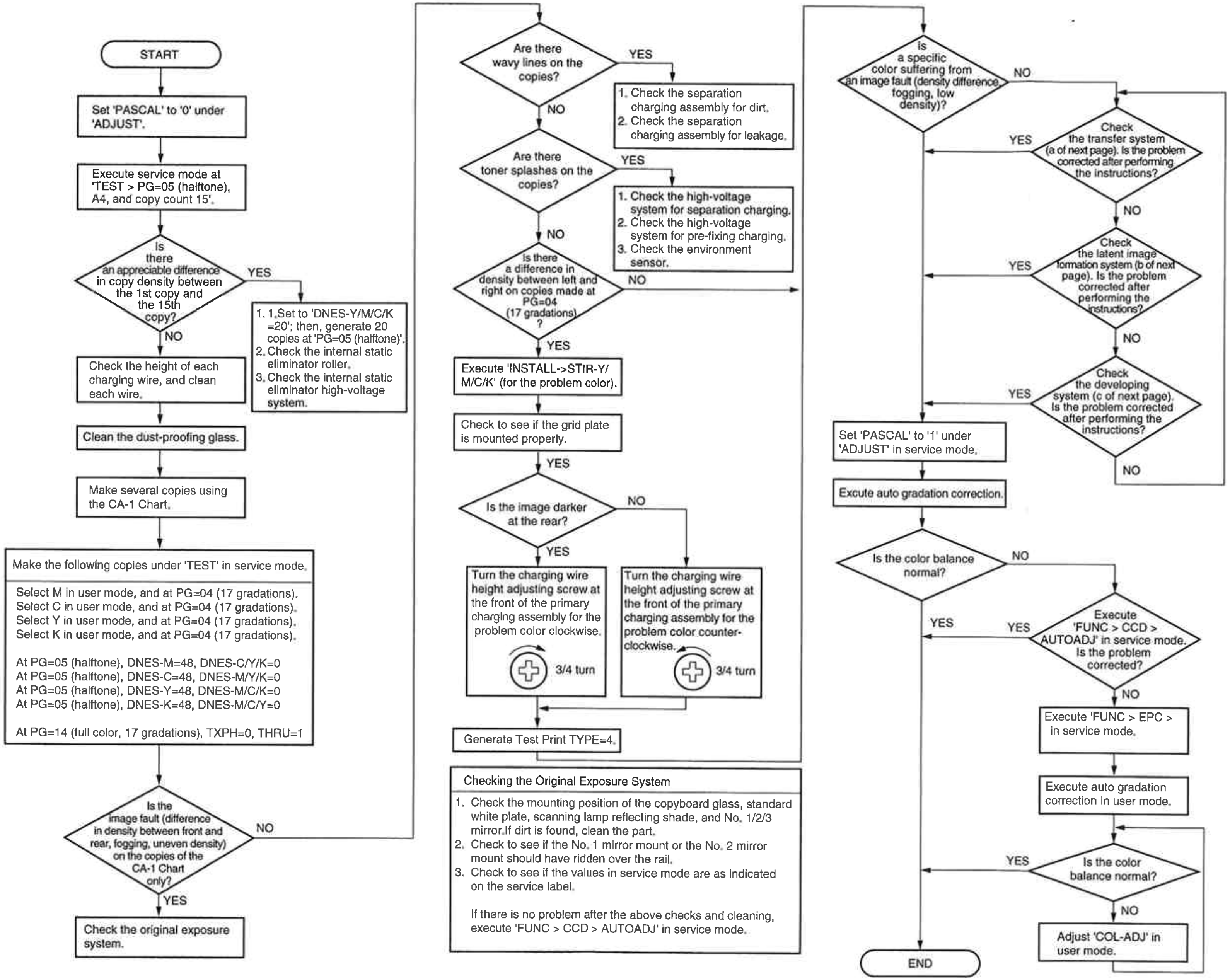
- To find out the cause (problem part) of a single problem, refer to the item under "Cause." For "AC power is absent," the cause may be the power plug, covers, power source, or others.
- To find out the checks to make or remedies to provide for a single problem, refer to the "Checks" and "Action"; make checks, answer to the questions YES or NO, and provide remedies accordingly. If the answer is otherwise, proceed to the next step.


<Step>
<Checks>
<Yes/No>
<Action>
1
Is the power plug connected to the power outlet?
NO
Connect the power plug.
YES
2
Are the front cover (right/left) and delivery cover closed properly?
NO
Close the cover.
YES
3
Is the rated voltage present at the power outlet?
NO
The problem is not of the copier. Advise the customer as such.
YES

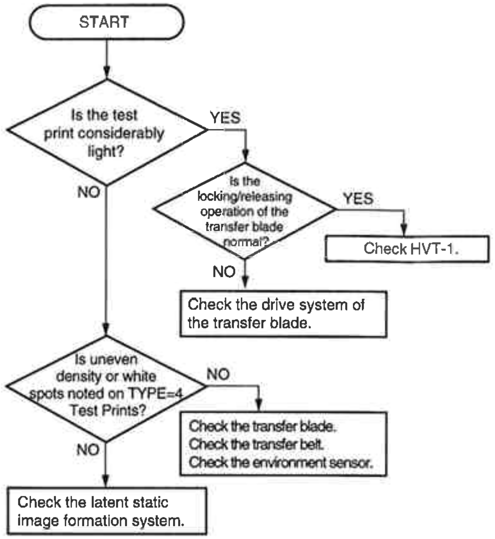
- Checks on the voltage using a meter call for special note; the description "Check the voltage between J109-1 (+) and J109-2 (–) on the DC controller PCB" means that the positive probe of the meter should be placed on J109-1 (+) and the negative probe, on J109-2 (–).

I. MAINTENANCE AND SERVICING

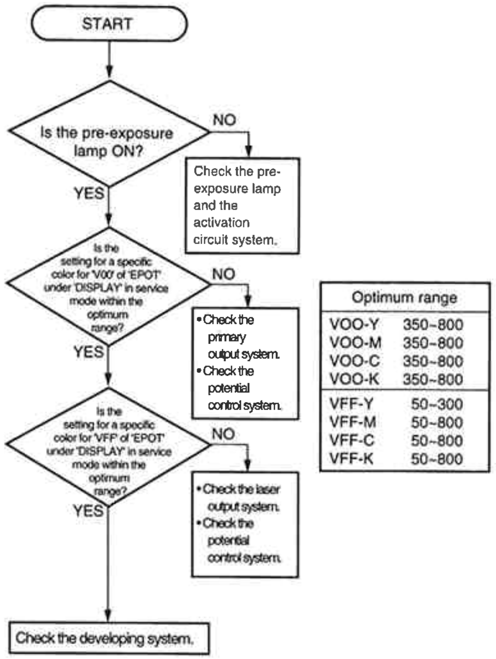
A. Image Adjustment Basic Procedure


START
Set 'PASCAL' to '0' under 'ADJUST'.
Execute service mode at 'TEST > PG=05 (halftone), A4, and copy count 15'.
Is there an appreciable difference in copy density between the 1st copy and the 15th copy?
YES
1. 1.Set to 'DNES-Y/M/C/K =20'; then, generate 20 copies at 'PG=05 (halftone)'.
2. Check the internal static eliminator roller.
3. Check the internal static eliminator high-voltage system.
NO
Check the height of each charging wire, and clean each wire.
Clean the dust-proofing glass.
Make several copies using the CA-1 Chart.
Make the following copies under 'TEST' in service mode.
Select M in user mode, and at PG=04 (17 gradations).
Select C in user mode, and at PG=04 (17 gradations).
Select Y in user mode, and at PG=04 (17 gradations).
Select K in user mode, and at PG=04 (17 gradations).
At PG=05 (halftone), DNES-M=48, DNES-C/Y/K=0
At PG=05 (halftone), DNES-C=48, DNES-M/Y/K=0
At PG=05 (halftone), DNES-Y=48, DNES-M/C/K=0
At PG=05 (halftone), DNES-K=48, DNES-M/C/Y=0
At PG=14 (full color, 17 gradations), TXPH=0, THRU=1
Is the image fault (difference in density between front and rear, fogging, uneven density) on the copies of the CA-1 Chart only?
NO
YES
Check the original exposure system.
Are there wavy lines on the copies?
YES
1. Check the separation charging assembly for dirt.
2. Check the separation charging assembly for leakage.
NO
Are there toner splashes on the copies?
YES
1. Check the high-voltage system for separation charging.
2. Check the high-voltage system for pre-fixing charging.
3. Check the environment sensor.
NO
Is there a difference in density between left and right on copies made at PG=04 (17 gradations) ?
NO
YES
Execute 'INSTALL->STIR-Y/M/C/K' (for the problem color).
Check to see if the grid plate is mounted properly.
YES
Is the image darker at the rear?
NO
YES
Turn the charging wire height adjusting screw at the front of the primary charging assembly for the problem color clockwise.
3/4 turn
Turn the charging wire height adjusting screw at the front of the primary charging assembly for the problem color counter-clockwise.
3/4 turn
Generate Test Print TYPE=4.
Checking the Original Exposure System
1. Check the mounting position of the copyboard glass, standard white plate, scanning lamp reflecting shade, and No. 1/2/3 mirror.If dirt is found, clean the part.
2. Check to see if the No. 1 mirror mount or the No. 2 mirror mount should have ridden over the rail.
3. Check to see if the values in service mode are as indicated on the service label.
If there is no problem after the above checks and cleaning, execute 'FUNC > CCD > AUTOADJ' in service mode.
Is a specific color suffering from an image fault (density difference, fogging, low density)?
NO
Check the transfer system (a of next page). Is the problem corrected after performing the instructions?
YES
NO
Check the latent image formation system (b of next page). Is the problem corrected after performing the instructions?
YES
NO
Check the developing system (c of next page). Is the problem corrected after performing the instructions?
YES
NO
Set 'PASCAL' to '1' under 'ADJUST' in service mode.
Excute auto gradation correction.
Is the color balance normal?
NO
YES
Execute 'FUNC > CCD > AUTOADJ' in service mode. Is the problem corrected?
YES
NO
Execute 'FUNC > EPC > in service mode.
Execute auto gradation correction in user mode.
Is the color balance normal?
YES
NO
Adjust 'COL-ADJ' in user mode.
END

a. Checking the Transfer System

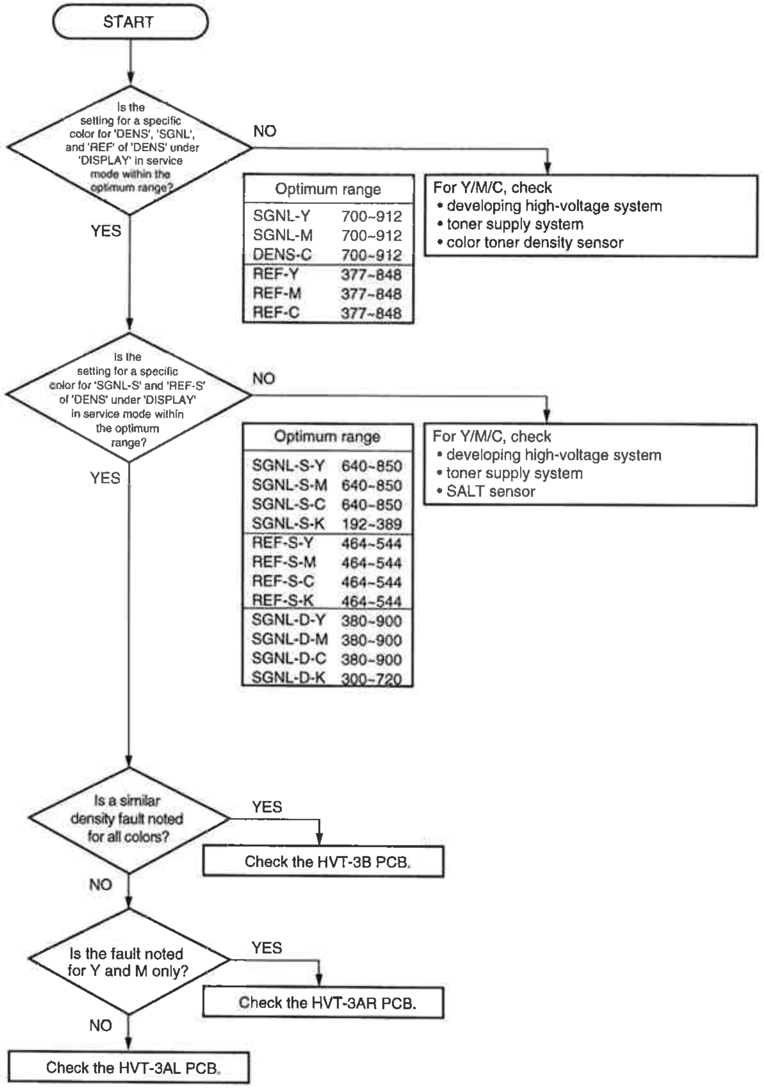

START
Is the test print considerably light?
YES
Is the locking/releasing operation of the transfer blade normal?
YES
Check HVT-1.
NO
Check the drive system of the transfer blade.
NO
Is uneven density or white spots noted on TYPE=4 Test Prints?
NO
Check the transfer blade.
Check the transfer belt.
Check the environment sensor.
NO
Check the latent static image formation system.

b. Checking the Latent Static Image Formation System


START
Is the pre-exposure lamp ON?
NO
Check the pre-exposure lamp and the activation circuit system.
YES
Is the setting for a specific color for 'V00' of 'EPOT' under 'DISPLAY' in service mode within the optimum range?
NO
• Check the primary output system.
• Check the potential control system.
YES
Is the setting for a specific color for 'VFF' of 'EPOT' under 'DISPLAY' in service mode within the optimum range?
NO
• Check the laser output system.
• Check the potential control system.
YES
Check the developing system.

Optimum range	
VOO-Y	350~800
VOO-M	350~800
VOO-C	350~800
VOO-K	350~800
VFF-Y	50~300
VFF-M	50~800
VFF-C	50~800
VFF-K	50~800

c. Checking the Developing System


START
Is the setting for a specific color for 'DENS', 'SGNL', and 'REF' of 'DENS' under 'DISPLAY' in service mode within the optimum range?
NO
For Y/M/C, check
• developing high-voltage system
• toner supply system
• color toner density sensor
YES
Is the setting for a specific color for 'SGNL-S' and 'REF-S' of 'DENS' under 'DISPLAY' in service mode within the optimum range?
NO
For Y/M/C, check
• developing high-voltage system
• toner supply system
• SALT sensor
YES
Is a similar density fault noted for all colors?
YES
Check the HVT-3B PCB.
NO
Is the fault noted for Y and M only?
YES
Check the HVT-3AR PCB.
NO
Check the HVT-3AL PCB.

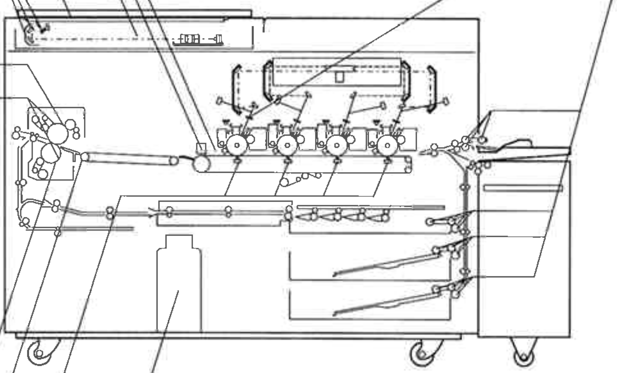
Optimum range	
SGNL-Y	700~912
SGNL-M	700~912
DENS-C	700~912
REF-Y	377~848
REF-M	377~848
REF-C	377~848

Optimum range	
SGNL-S-Y	640~850
SGNL-S-M	640~850
SGNL-S-C	640~850
SGNL-S-K	192~389
REF-S-Y	464~544
REF-S-M	464~544
REF-S-C	464~544
REF-S-K	464~544
SGNL-D-Y	380~900
SGNL-D-M	380~900
SGNL-D-C	380~900
SGNL-D-K	300~720

B. Scheduled Servicing

Parts	Tools/solvents	Work/remarks
Pattern reading unit (LED/shutter)	Lint-free paper Blower brush	Cleaning (Note 1)
Separation/Pre-fixing charging assembly	Alcohol Lint-free paper	Cleaning
Scanner rail	Alcohol	Cleaning (Note 4)
Standard white plate	Alcohol Lint-free paper	Cleaning (Note 4)
No. 1 through No. 3 mirror	Blower brush	Cleaning (Note 2)
Reflecting shade		(Note 4)

Parts	Tools/solvents	Work/remarks
Dust-proofing glass	Lint-free paper Blower brush	Cleaning (Note 3)
Pick-up/feeding/separation roller	Alcohol Lint-free paper	Cleaning

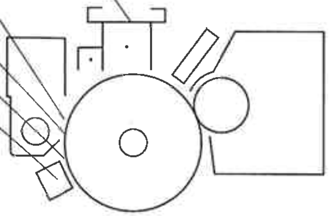


Parts	Tools/solvents	Work/remarks
Oil applying blade	Alcohol Lint-free paper	Cleaning
Thermistor (upper / lower)	Solvent Lint-free paper	Cleaning
Upper separation claw	Solvent Lint-free paper	Cleaning

Parts	Tools/solvents	Work/remarks
Oil removing blade	Alcohol Lint-free paper	Cleaning
Inlet guide plate	Solvent	Cleaning
Transfer blade	Lint-free paper Cotton swab	Cleaning
Waste toner box		Collecting the box

Note 1:
Take care not to apply force to the LED or to keep the CCD free of dust.
Note 2:
Take care not to touch the mirror or the lens and to keep the CCD free of dust.
Note 3:
Perform when performing the photosensitive drum.
Note 4:
At time of replacing the scanning lamp.

Parts	Tools/solvents	Work/remarks
Primary/pre-primary charging assembly	Alcohol Lint-free paper	Cleaning
Cleaner side seal	Blower brush	Cleaning (Note 3)
Cleaner end seal		
Scoop-up sheet	Lint-free paper Blower brush	Cleaning (Note 3)
No. 2 scoop-up sheet	Lint-free paper Blower brush	Cleaning (Note 3)
SALT sensor/Shutter	Lint-free paper Blower brush	Dry-wiping; do not use solvent.



II. STANDARDS AND ADJUSTMENTS

A. Image-Related Parts

1 Non-Image Width

The non-image width on copies made in Direct with original detection OFF must be as follows:

Leading edge: 2.5 ±1.5 mm (2.5 ±2.0 mm)
Left/right: 2.0 ±1.0 mm (2.0 ±1.5 mm)

The value in parentheses refers to the second side of a two-sided copy.

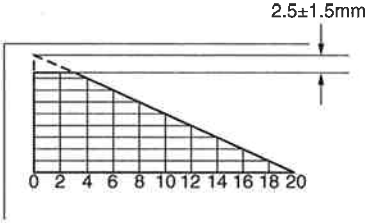


Figure 7-201 Leading Edge Non-Image Width

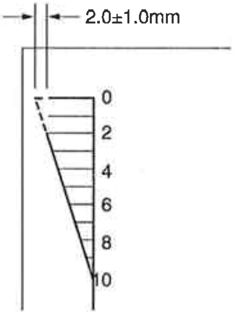


Figure 7-202 Left/Right Non-Image Width

2 Image Margin

The image margin on copies made in Direct with original detection OFF must be as follows:

Leading edge: 2.5 ±1.5 mm (2.5 ±2.0 mm)
Left/right: 2.0 ±1.0 mm (2.0 ±1.5 mm)

The value in parentheses refers to the second side of a two-sided copy.

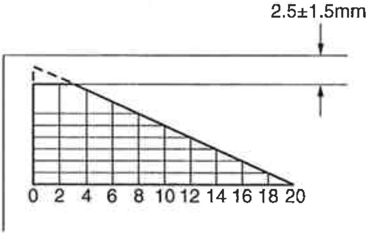


Figure 7-203 Leading Edge Margin

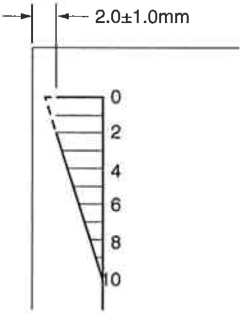


Figure 7-204 Left/Right Image Margin

3 Checking and Adjusting the Non-Image Width and Margin

Make adjustments in the following order:

- Left-right registration
- Image margin
- Image reading start position (ADJ-XY)
- Image margin (check)

a. Adjusting the Left/Right Registration

1) Make 10 copies each using all cassettes, multifeeder, and duplexing unit, and check the left/right margin.
2) If the margin is not as indicated, perform the following:

- Standard Registration

3) Select 'FUNC > ATTRACT'.
4) Using 'ATT-SLCT', select the pick-up assembly which is outside the specification.
5) Press 'ATT-ON'.
   (Paper will be picked up automatically and stopped retained on the transfer belt.)
6) Make adjustments so that the distance L between the front edge of paper [1] and the front side plate [3] of the transfer unit [2] is 74.7 ±0.5 mm (reference).
   (In the case of LTR, 83.7 ±0.5 mm.)

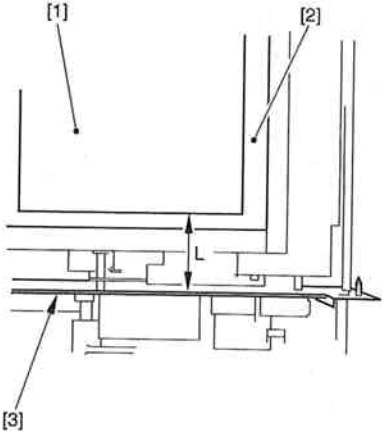


Figure 7-205 Standard Registration

- Pick up from the Cassette
  Draw out the cassette from the copier.
  Loosen the screw [1] shown in Figure 7-206, and adjust the position of the cassette hook plate [2] so that the standard value is attained.
  Be sure to perform "paper width standard value registration" after this adjustment.

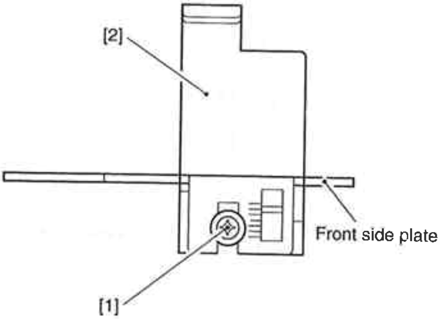


Figure 7-206 (top view of cassette stay)

- Multifeeder
  Turn the screw [1] to move the tray position so that the standard value is attained.

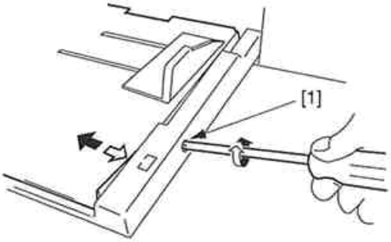


Figure 7-207

- Two-Sided Copies
  Loosen the screw [1], and adjust the position of the paper guide plate so that the standard value is attained.

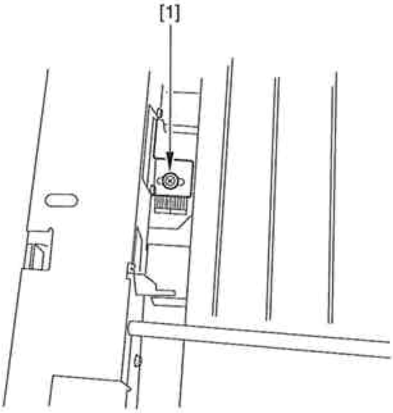


Figure 7-208

- Pick-Up from the Paper Deck

1) Remove the four screws [1], and disconnect the connector [2]; then, remove the paper deck heater [3].

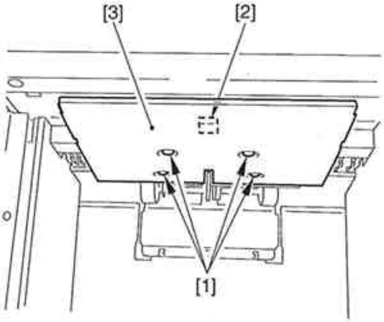


Figure 7-209

2) Pull out the push locks [4] used to fix the side guide plates (front, rear) in place, and remove the side guide plate.

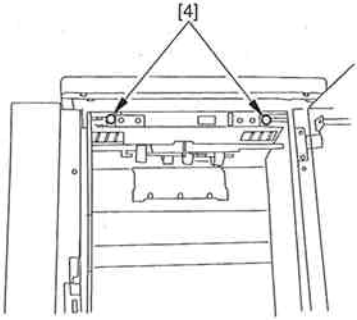


Figure 7-210

3) Loosen the three adjusting screws [5] each, and adjust the upper mounting plates (rear/front) of the side guide plate.

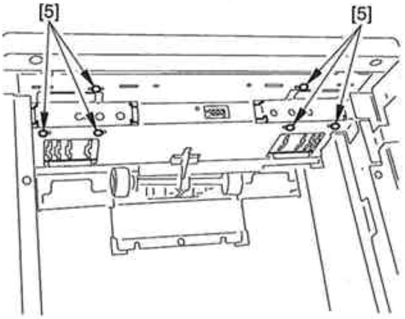


Figure 7-211

Take care not to change the paper width.

4) If the discrepancy is excessive, loosen the three adjusting screws [6] each, and adjust the lower mounting plates (rear/front) on the side guide plate.

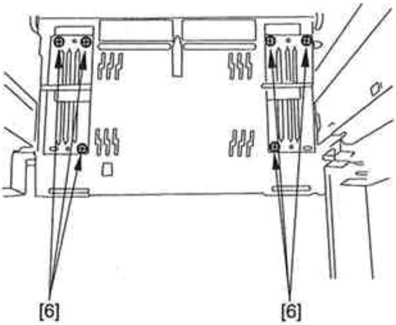


Figure 7-212

b. Adjusting the Image Margin

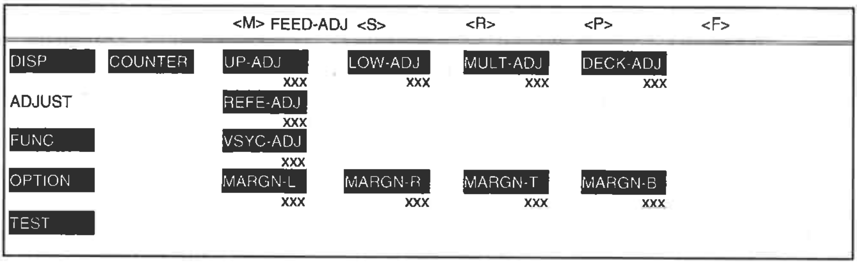

<M> FEED-ADJ <S>
<R>
<P>
<F>
DISP
COUNTER
UP-ADJ
xxx
LOW-ADJ
xxx
MULT-ADJ
xxx
DECK-ADJ
xxx
ADJUST
REFE-ADJ
xxx
FUNC
VSYC-ADJ
xxx
OPTION
MARGN-L
xxx
MARGN-R
xxx
MARGN-T
xxx
MARGN-B
xxx
TEST

Figure 7-213

1) Start service mode, and select ADJUST > FEED-ADJ.
2) While the FEED-ADJ screen is on, press the Start key.
3) If the image margin is not as indicated, adjust the image writing start position in the main scanning direction using 'UP-ADJ', 'LOW-ADJ', 'MULT-ADJ', 'DECK-ADJ', and 'REFE-ADJ' and using 'VSYC-ADJ' in the sub scanning direction.

   Then, adjust the non-image width using 'MARGIN-L, -R, -T, -B'.
   (For details, see VII. "SERVICE MODE.")

c. Adjusting the Image Reading Start Position (ADJ-XY)

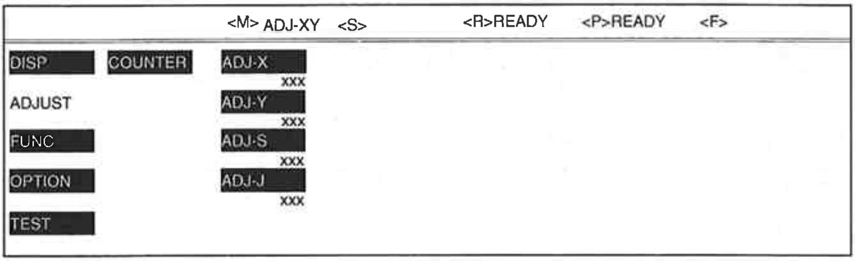


Figure 7-214

1) Start service mode, and select ADJUST > ADJ-XY.
2) While the ADJ-XY screen is on, press the Start key.
    - The appropriate copying mode will be set automatically, and a copy is made with a shift of about 20 mm as shown in Figure 7-215.
3) If a portion of the image is missing, decrease the setting of 'ADJ-X' and 'ADJ-Y'.
4) If an area outside the image area is copied, increase the setting of 'ADJ-X' and 'ADJ-Y'.
5) Press the Start key once again, and check the output.
6) Press the Reset key.

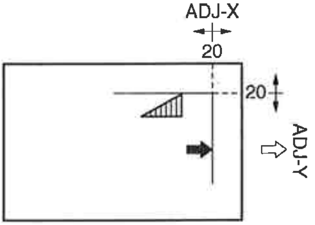


Figure 7-215

d. Adjusting the Pick-Up Timing (paper deck)

If a discrepancy is found in the image leading edge margin on LTR copies made using the paper deck, correct the problem by performing the following steps:

1) Place three or more sheets of LTR paper in the paper deck.
2) Start service mode, and select 'FUNC > P-UP-TMG'.
3) Execute 'PK-ADJ-D'.
    - The machine picks up a single sheet of paper.
4) Execute 'AK-ADJ-D' for a total of three times to pick up three sheets of paper.
5) When pick-up has ended, press 'D-SEND-D'.

B. Original Illuminating System

1 When Replacing the Scanning Lamp, Standard White Plate, the glass retainer left Lamp Regulator, Reflecting Lamp Cover, or Analog Processor PCB

1) Execute data reading FUNC > CCD > AUTO-ADJ in service mode.

2 Routing the Scanner Cable

- You must keep the mirror positioning tool (FY9-3002-000) near at hand before routing the scanner cable.

1) Remove the upper rear left cover and the reader unit rear cover.
2) Remove the control panel.
3) Remove the vertical size plate and the glass retainer right, and remove the copyboard glass.
4) Move the No. 2 mirror mount until the pulley shaft [1] of the No. 2 mirror mount is visible through the long hole [2] in the side plate.

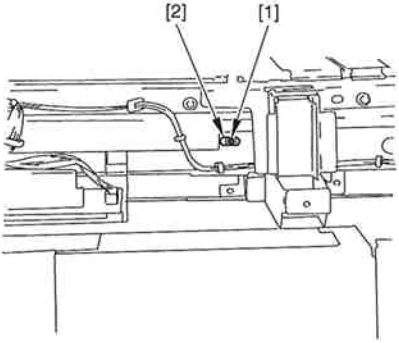


Figure 7-216 (rear)

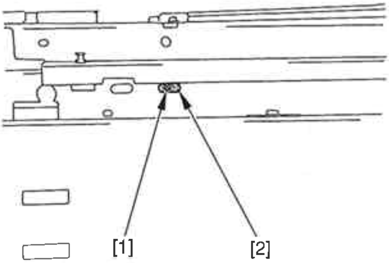


Figure 7-217 (front)

5) Fit a binding screw (M4 × 8) [3] to the pulley shaft [4] to fix the front and rear of the pulley temporarily to the side plate [5], thereby temporarily fixing the No. 2 mirror mount in place.

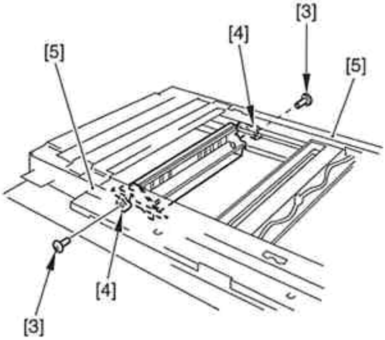


Figure 7-218

6) Fit the scanner cable on the pulley and the hook as indicated in Figure 7-219.

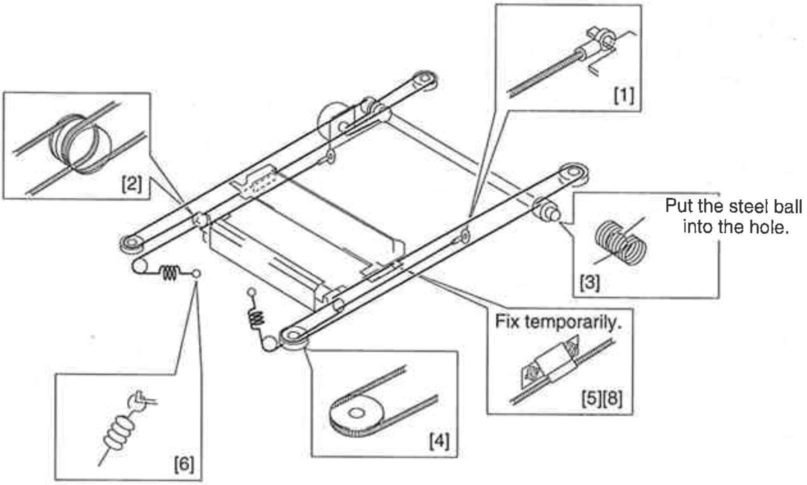

[1]
[2]
Put the steel ball into the hole.
[3]
Fix temporarily.
[5][8]
[4]
[6]

Figure 7-219

7) Remove the screw [3] used in step 5).
8) Loosen the screw on the mirror positioning tool (FY9-3002-000), and extend the arm [6] fully.

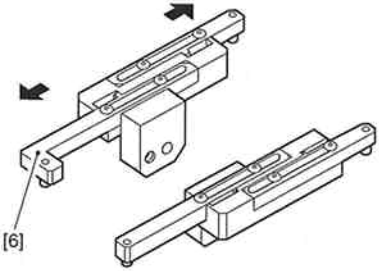


Figure 7-220

9) Set the mirror positioning tool [7] between the No. 1 mirror mount and the No. 2 mirror mount; then, insert the pin [8] that comes with the mirror positioning tool.

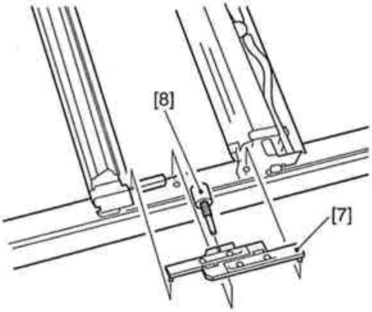


Figure 7-221

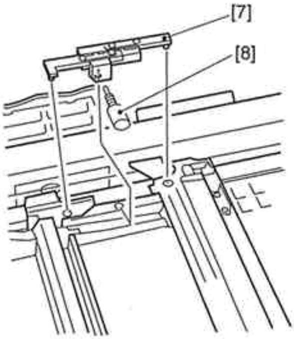


Figure 7-222

10) Using two screws [9], fit the metal fixing [10] of the scanner cable to the No. 1 mirror mount through the angular hole in the side plate.

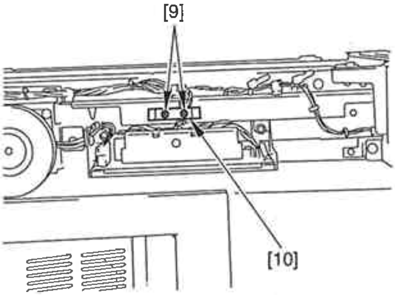


Figure 7-223

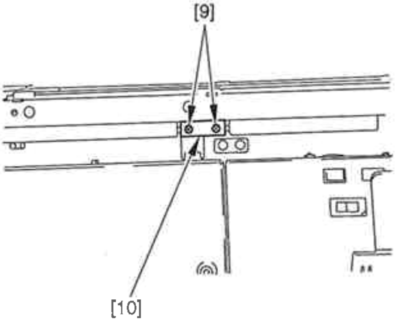


Figure 7-224

11) Remove the mirror positioning tool.

REF.

You need not adjust the cable tension.

1. Check to make sure that the scanner cable is not twisted or has not ridden over the pulley.
2. Move the No. 1 mirror mount and the No. 2 mirror mount by hand to make sure that they move smoothly; at this time, take care not to touch the reflecting plate.

C. Photosensitive Drum-Related Parts

1 Removing the Photosensitive Drum

1) Draw out the process unit from the copier, and remove the developing assembly/cleaner unit.
2) Holding both ends of the drum [1], lift the drum to remove.

Take out the photosensitive drum, being careful not to damage it.

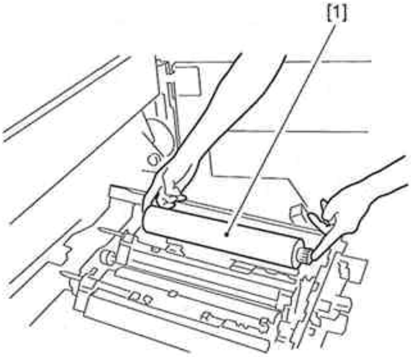


Figure 7-225

2 Points to Note When Installing the Photosensitive Drum

- Make sure that the direction of the two bosses [1] on the flange shaft of the photosensitive drum and the direction of the slits [2] in the drum shaft match.

When rotating the photosensitive drum, be sure to hold up the developing assembly so that it is away from the drum to prevent damage.

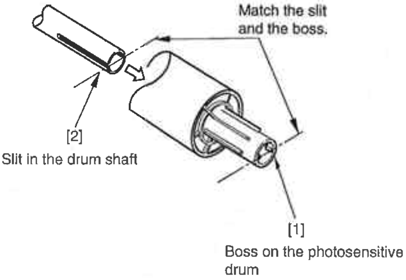


Figure 7-226

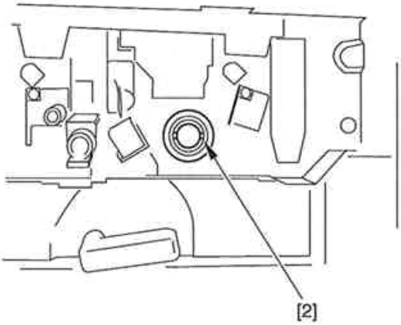


Figure 7-227

Set the process unit by using the new drum protection sheet which comes with photosensitive drum when replace the photosensitive drum.

3 Points to Note When Fitting the Drum Drive Belt

Fit the drum drive belt [2] so that all the markings [1] on the drum drive pulleys face the same direction.

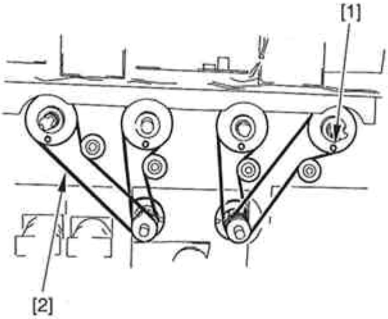


Figure 7-228

D. Charging Assembly-Related Parts

1 Adjusting the Height of the Charging Wire

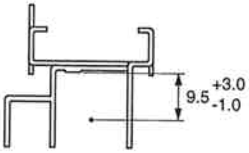
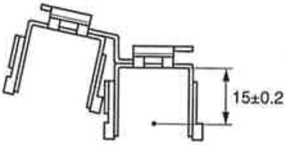
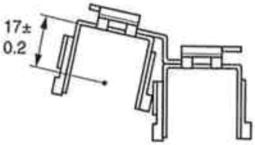
Charging assembly	Height of charging wire (mm)	Variable width
Primary charging assembly		4 mm (approx.)
Separation charging assembly		4 mm (approx.)
Pre-fixing charging assembly		4 mm (approx.)

Table 7-201

The height (position) of the charging wire may be adjusted by turning the screw found behind the corona assembly. (The height of the charging wire for the primary charging assembly, however, cannot be adjusted.) A full turn of the screw changes the position of the charging wire by about 0. 7 mm.

2 Points to Note When Handling the Primary Grid Plate and the Primary Charging Wire

Do not clean the primary grid plate or the primary charging wire. If image faults (uneven density) occurs, replace the part.

E. Developing Assembly-Related Parts

1. Replacing the Developer

1) Insert the cover switch actuator into the cover switch assembly.
2) Turn on the power, and insert and turn the control key.
3) Start service mode, and select 'FUNC > INSTALL'.
4) Select the 2nd screen, and set 'LSNS-KIL' to '1'.
5) Select '0' by executing 'ADJSUT > PASCAL > PASCAL'.
6) Wait until warm-up ends.
7) Lift the hopper assembly to the topmost position. (At this time, the locking mechanism will turn on automatically. Make a visual check of the hopper assembly to make sure that the hopper assembly is locked.)
8) Install the hopper retaining fixings (left, right).
9) Release the hopper assembly, and move the assembly down to where the retaining fixings are located.

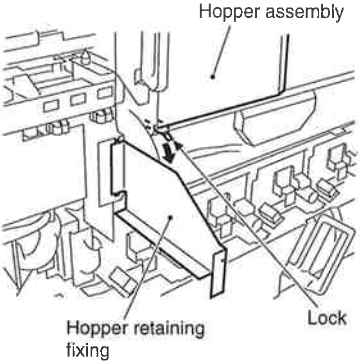

Hopper assembly
Hopper retaining fixing
Lock

Figure 7-229

10) Install the laser shutter opening tool.

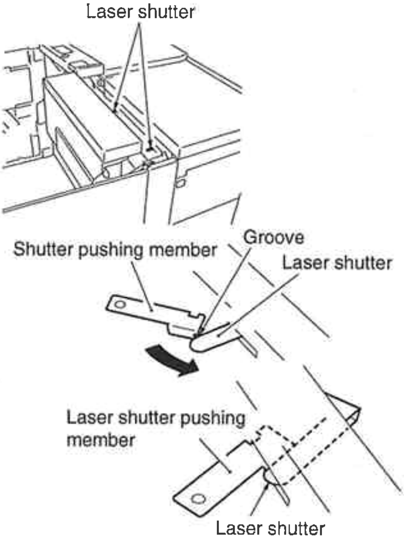

Laser shutter
Shutter pushing member
Groove
Laser shutter
Laser shutter pushing member
Laser shutter

Figure 7-230

11) Raise the hopper assembly as far as it moves, and operate the locking mechanism by hand; then, remove the hopper metal fixings (left, right).
12) Slide out the transfer assembly.
13) Place the collecting container as shown.

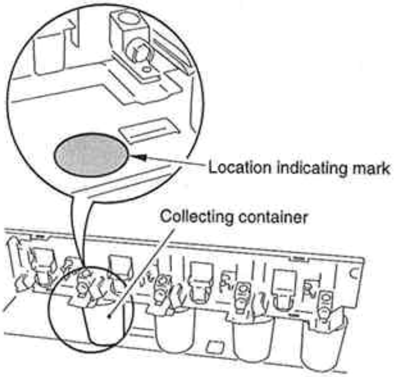


Figure 7-231

14) Remove the screw, and pull out the collecting container shutter.
(At this time, check to make sure that the collecting container opening is open.)

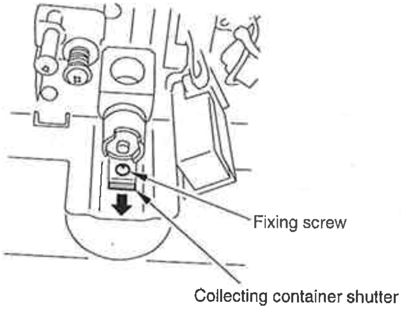


Figure 7-232

15) Select the 2nd screen of 'FUNC > INSTALL' in service mode.
16) To collect all four developers, press 'RECV-4'; for each, press 'RECV-Y, -M, -C, -K'.
(The developer will be discharged into the collecting container; the operation will finish in about 2 min.)
17) When done, close the collecting container shutter, and fit and tighten the screw.
18) Remove the collecting container.
19) Close the transfer unit.
20) Press 'SPLY-Y, -M, -C, -K' as appropriate for the color to replace on the service mode screen.
21) Check to make sure that the screw inside the developing assembly has started to rotate.
22) Fit the funnel that comes with the starter in the supply mouth of the developing assembly.

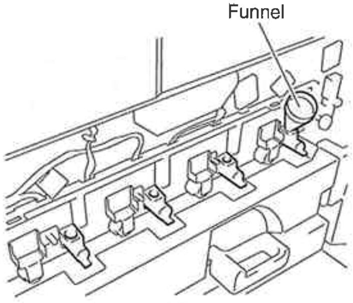


Figure 7-233

23) Pour starter into the developing assembly.
    - Tilt the container while turning it to avoid spilling the starter.

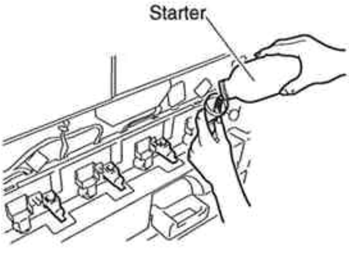


Figure 7-234

24) When done, press the Stop key to stop the operation of the developing assembly.
25) Install the hopper metal fixings (left, right), and release the locking mechanism of the hopper assembly; then, lower the hopper as far as the metal fixings.
26) Remove the laser shutter opening tool.
27) Lift the hopper assembly to the topmost position.
    (At this time, the locking mechanism will not work; lock it by hand.)
28) Clean the SALT sensor of the color in question.
29) Remove the hopper retaining fixing (left, right).
30) Release the hopper assembly, and move it down to its specific position.
31) Select the 1st screen of 'FUNC INSTALL' in service mode.

■ **Replacement for All Colors**

32) Execute 'STIR-4'. (about 1 min)
33) Execute 'INIT-7'. (about 2 min)
34) Execute 'WINCLR-4'.
35) Record the results on the service label.
36) Execute 'ADJUST > PASCAL > PASCAL' to select '1'.
37) Turn off and on the power switch.
38) Execute 'auto gradation correction' in user mode.

■ **Replacement for Y/M/C**

32) Execute 'STIR-Y/M/C' as necessary. (about 1 min)
33) Execute 'INIT-Y/M/C' as necessary. (about 1 min)
34) Execute 'SINIT-Y/M/C' as necessary. (about 1 min)
35) Execute 'WINCLR-Y, M, or -C'.
36) Select '1' by executing 'ADJUST > PASCAL > PASCAL'.
37) Record the result on the service label.
38) Turn off and then on the power switch.
39) Execute 'auto gradation correction' in user mode.

■ **Replacement for Bk Only**

32) Execute 'STIR-K'. (about 1 min)
33) Execute 'SINIT-K' (about 1 min)
34) Execute 'WINCLR-K'.
35) Record the result on service label.
36) Select '1' by executing 'ADJSUT > PASCAL > PASCAL'.
37) Turn off and then on the power switch.
38) Execute 'auto gradation correction' in user mode.

2. When Replacing the Developing Assembly (MCYK)

1) Using 'FUNC > INSTALL' in service mode, set 'IMG-REG' to '0'.
2) Replace the developing assembly.
3) Replace the developer of the color in question.
4) Using 'FUNC > INSTALL' in service mode, set 'IMG-REG' to '1'.

3. When Replacing the Photosensitive Drum

1) After replacing the cleaning blade, apply lubricant.
2) Clean the plastic film [1] under the process unit with lint-free paper.

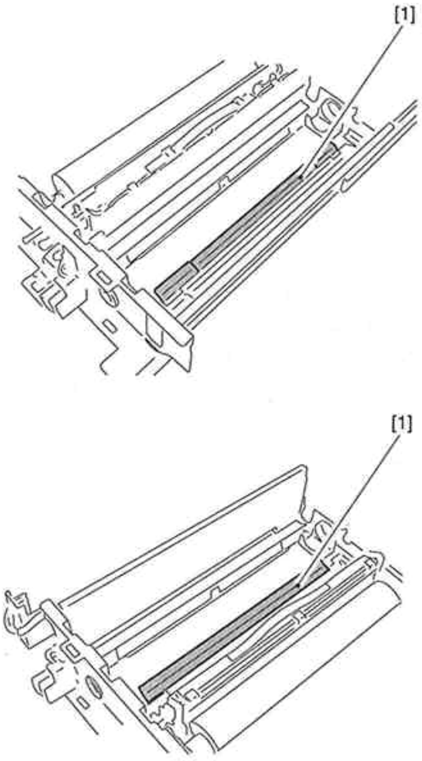


Figure 7-235

3) Install the photosensitive drum.
4) Install the drum protection sheet.
5) Install the developing assembly, and install the process unit.
6) Ready the copier, and turn on the power switch.
7) Execute 'auto gradation correction' in user mode.

4. When Supplying the Hopper with Toner

Perform the following steps when supplying a new hopper or the existing hopper with little toner (after replacing the toner level sensor, for example) with toner so as to prevent leakage of toner from the hopper:

1) Install the hopper position metal fixings (left, right) to the copier.
2) Fix the hopper assembly to the hopper position metal fixings.
3) Push the shutters [1] at the bottom of the hopper in the direction of the arrow, making sure that the shutters are securely closed.

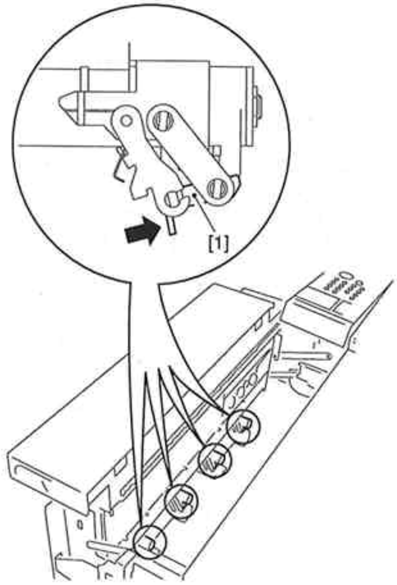


Figure 7-236

4) Start supplying toner to the hopper.
5) After a minimum of 5 min, lower the hopper.

F. Transfer Belt Unit

1 Points to Note When Replacing the Transfer Belt

- The transfer belt has its own orientation. When installing it, make sure that the side with the seam detecting sticker (over the transfer belt assembly) is toward the rear.
- Avoid touching the surface of the transfer belt (particularly, the area coming into contact with paper).
  If the transfer belt is soiled, wipe it with a moist cloth (or a cloth moistened with alcohol). Be sure that the belt is completely dry before installing it to the machine.
- If you have removed the transfer belt or replaced it, be sure to initialize the transfer belt swing data after the work by executing 'FUNC > MISCp > E075-RLS' in service mode. When intializing, see chapter7, 2 Intializing the Transfer Belt Swing Control Data.
- When installing the transfer unit, check to make sure that the bearing [2] is securely in the transfer assembly frame rear support plate [1].

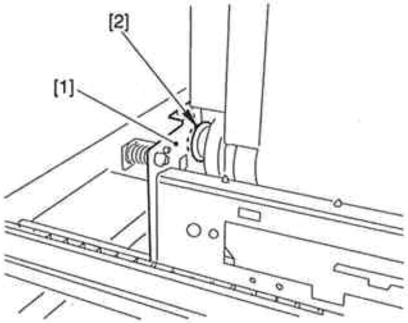


Figure 7-237

2 Initializing the Transfer Belt Swing Control Data

When the transfer belt is swung, the swing data is recorded for use during swinging operation.

You must initialize the transfer belt swing control data using 'FUNC > F-MISCp > E075-RLS' in service mode whenever you have done the following:

- If you have removed the transfer belt (including replacement).
- If you have replaced the transfer belt swing motor.

Points to Note

- Check to make sure that the transfer belt is not in contact with the end sensor.
- Make sure that the transfer belt unit is drawn out. (Insert the cover switch key to start service mode; 'E075' will be indicated, and the machine will enter service mode.)
- After executing '075-RLS', turn off and then on the power switch.

3 Adjusting the Tension on the Drive Belt of the Transfer Belt Motor

1) Make adjustments so that the gap of the adjusting screw [1] of the transfer belt motor is 3.5 ±0.3 mm.

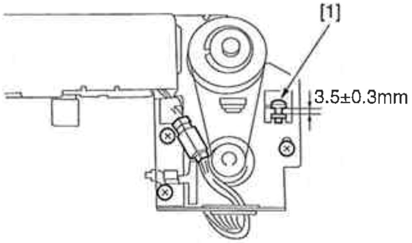


Figure 7-238

4 Adjusting the Position of the Transfer Belt-Related Solenoid

a. Positioning the Transfer Cleaning Blade Solenoid (SL6)

Fix the solenoid in place by butting the pin [1] of the slider against the angular hole end A of the solenoid mount while the plunger of the solenoid is pulled.

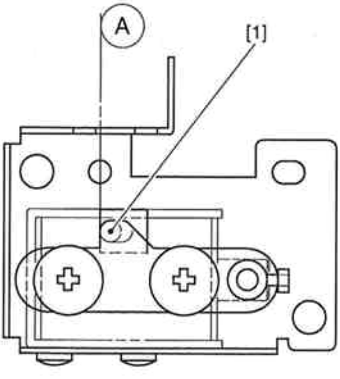


Figure 7-239

b. Adjusting the Position of the Transfer Blade Solenoid (SL7)

Fix the solenoid in place so that the distance between the solenoid arm and the solenoid mount base is 17.8 ±0.3 mm when the plunger of the solenoid is pulled.

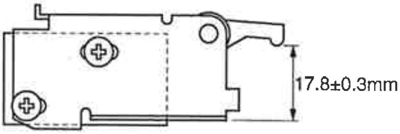


Figure 7-240

c. Adjusting the Position of the Polishing Roller Solenoid (SL18)

Fix the solenoid in place so that the stroke indicated in Figure 7-253 is 2.5 ±0.3 mm when the solenoid arm is pulled by the spring.

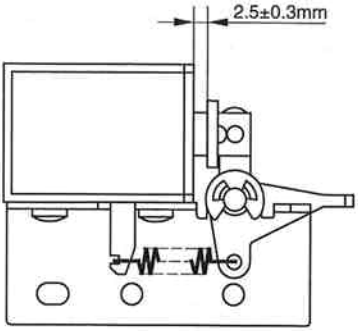


Figure 7-241

G. When Replacing the Pick-Up/Feeding-Related Parts

1 Registering the Cassette/ Multifeeder Paper Width Basic Setting (under 'FUNC')

You must register the paper width basic setting if you have

- Replaced the paper width VR of the copier (including the multifeeder).
- Adjusted the front/rear registration for the cassette.

For the cassette, you must register the setting for 'STMTR' and 'A4R'; for the multifeeder, you must register the setting for 'A6R', 'A4R', and 'A4'.

a. Cassette 1 or 2

1) Slide out the cassette you want to register the setting for, and set the paper width guide plate inside the cassette to A4R.
2) Set the cassette in the copier.
3) Check that the basic setting is indicated on the CST-AD screen of 'FUNC' in service mode on the control panel.
4) Select the size of the cassette for which you want to register the basic setting:
   UP-A4R (cassette 1)
   LOW-A4R (cassette 2)
5) Note that basic setting 1 has been registered.
6) Slide out the cassette you want to register the setting for, and set the paper width guide plate inside the cassette to STMTR.
7) Set the cassette in the copier.
8) Check that the basic setting is indicated on the CST-AD screen of 'FUNC' in service mode on the control panel.
9) Select the size of the cassette for which you want to register the basic setting:
   UP-STMTR
   LOW-STMTR
10) Note that basic setting 2 has been registered.

b. Multifeeder

1) Set the paper guide plate of the multifeeder to A4R (210 mm).
2) Note that the basic setting is indicated on the CST-AD screen for 'FUNC' in service mode on the control panel.
3) Select the size for which you want to register the basic setting.
   MF-A4R
4) Note that basic setting 1 has been registered.
5) Set the paper guide plate of the multifeeder to A6R (105 mm).

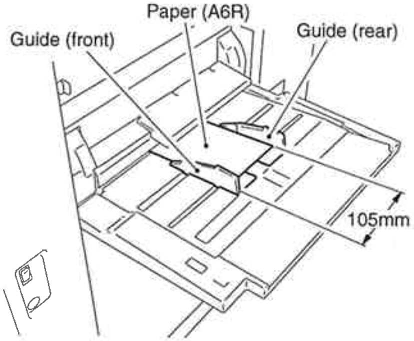


Figure 7-242 (e.g., A6R)

6) Check that the basic setting is indicated on the CST-AD screen under 'FUNC' in service mode on the control panel.
7) Select the size for which you want to register the basic setting.
   MF-A6R
8) Note that basic setting 2 has been registered.
9) Set the paper guide plate of the multifeeder to A4 (297 mm).
10) The basic setting is indicated on the CST-AD screen under 'FUNC' in service mode on the control panel.
11) Select the size for which you want to register the basic setting.
    MF-A4
12) Note that basic setting 3 has been registered.

⚠

If you have registered basic settings, record the settings on the service label.
If you have replaced the DC controller PCB, enter the settings recorded on the service label using 'DC-CON' under 'FUNC' in service mode.

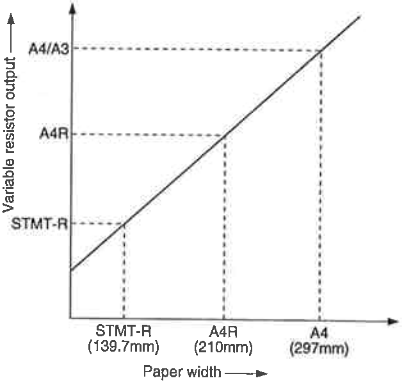


Figure 7-243

2 Orientation of the Pick-Up Roller (cassette pick-up assembly/duplexing unit pick-up assembly)

When installing the pick-up roller [1] to the pick-up assembly, make sure that the round marking [2] on the rubber portion is to the front.

Color of the coller : Front ---- gold
Rear ----- silver

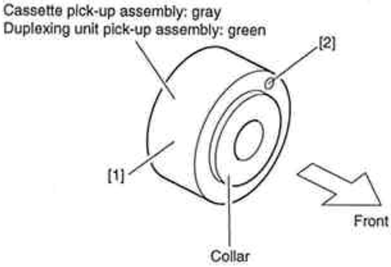
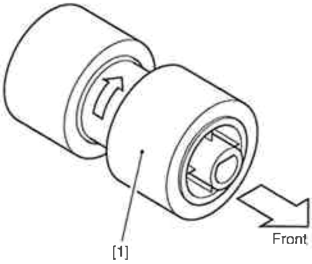

Cassette pick-up assembly: gray
Duplexing unit pick-up assembly: green
[2]
[1]
Front
Collar

Figure 7-244

3 Orientation of the Separation Roller (cassette pick-up assembly/duplexing unit pick-up assembly)

When installing the separation roller [1] to the pick-up assembly, make sure that the D cut in the collar is to the front.

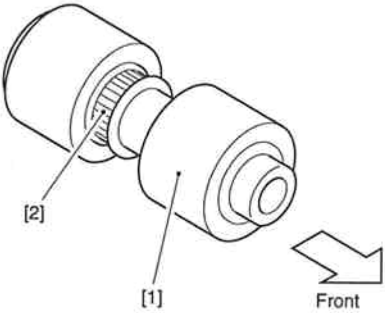


Cassette pick-up assembly: gray
Duplexing unit pick-up assembly: green

Figure 7-245

4 Orientation of the Feeding Roller (cassette pick-up assembly)/Duplexing Unit Feeding Roller 1

When installing the feeding roller [1] to the pick-up assembly, make sure that the belt pulley [2] attached to the separation roller is to the rear.



Cassette pick-up assembly: gray
Duplexing unit pick-up assembly: green

Figure 7-246

5 Orientation of the Paper Deck Pick-Up Roller

When installing the pick-up roller to the pick-up roller shaft, make sure that the marking is to the rear.

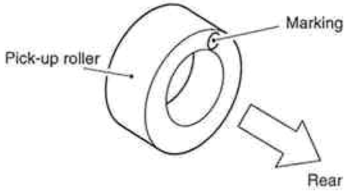

Marking
Pick-up roller
Rear

Figure 7-247

6 Orientation of the Paper Deck Pick-Up/Feeding Roller

When installing the pick-up/feeding roller, make sure that the marking is to the rear.

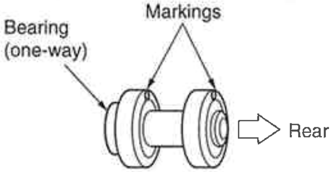

Markings
Bearing
(one-way)
Rear

Figure 7-248

7 Orientation of the Paper Deck Separation Roller

1) When installing the separation rubber roller, make sure that the marking is to the rear (coupling side).

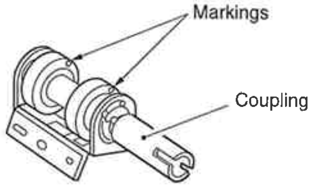

Markings
Coupling

Figure 7-249

2) When installing the separation roller, make sure that the orientation identification rib on the roller collar is to the front.

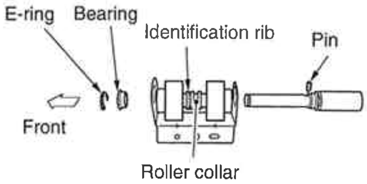

E-ring
Bearing
Identification rib
Pin
Front
Roller collar

Figure 7-250

8 Adjusting the Position of the Paper Deck Pick-Up Roller Releasing Solenoid (SL8001)

Install the solenoid where the paper deck pick-up roller is 4.0 ±1 mm from the surface of the paper when the plunger of the solenoid is pushed in. (Keep one sheet of paper on the paper deck lifter.)

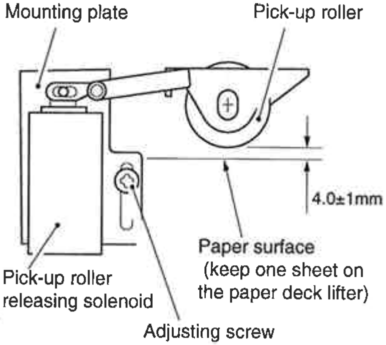

Mounting plate
Pick-up roller
4.0±1mm
Paper surface
(keep one sheet on
the paper deck lifter)
Pick-up roller
releasing solenoid
Adjusting screw

Figure 7-251

9 Adjusting the Pressure of the Paper Deck Separation/Feeding Roller

If pick-up faults or double-feeding occurs in the paper deck, change the position of the spring hooked on the retard stay.

a. If pick-up faults occur, increase the pressure.
b. If double-feeding occurs, decrease the pressure.

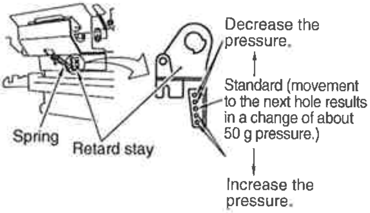

Decrease the
pressure.
Standard (movement
to the next hole results
in a change of about
50 g pressure.)
Increase the
pressure.
Spring
Retard stay

Figure 7-252

10 Orientation of the Feeding Roller 2 (duplexing unit pick-up assembly)

When installing the feeding roller 2 [1], make sure that the round marking [2] is to the front.

Color of the coller : Front -----gold
Rear -----silver

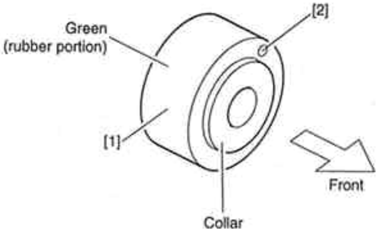
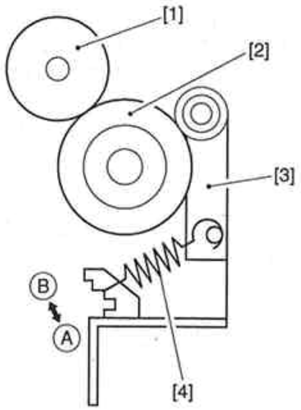


Figure 7-253

11 Adjusting the Pressure of the Separation Roller (cassette pick-up assembly/duplexing unit pick-up assembly)

If double-feeding or pick-up faults occur during pick-up operation, change the position of the pressure spring of the separation roller.

a. If double-feeding occurs, move the spring in the direction of A. (decrease the pressure)
b. If pick-up faults occur, move the position of the spring in the direction of B. (increase the pressure)



[1] Feeding roller
[2] Separation roller
[3] Locking lever
[4] Pressure spring

Figure 7-254

12 Adjusting the Position of the Cassette Pick-Up Roller Releasing Solenoid (SL9, SL10)

Install the solenoid so that the pick-up roller arm [1] butts against the upper stay [2] when the plunger of the solenoid is pushed in.

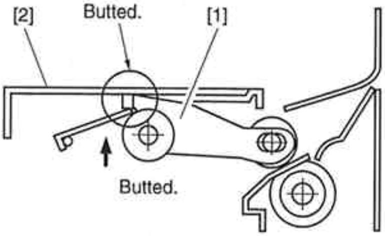


Figure 7-255

13 Adjusting the Pressure of the Multifeeder Separation Roller

If double-feeding or pick-up faults occur during pick-up operation, change the position of the pressure spring [2] of the separation roller [1].

a. If double-feeding occurs, move the spring holder in the direction of A. (decrease the pressure)
b. If pick-up faults occur, move the position of the spring holder in the direction of B. (increace the pressure)

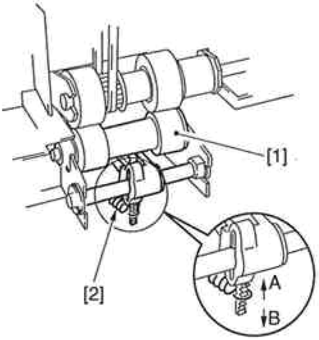


Figure 7-256

14 Adjusting the Position of the Multifeeder Pick-Up Roller Releasing Solenoid (SL5)

Install the solenoid so that the distance between the solenoid arm [2] and the rear side plate [3] is 3.5 ±0.2 mm when the plunger of the solenoid [1] is pushed in.

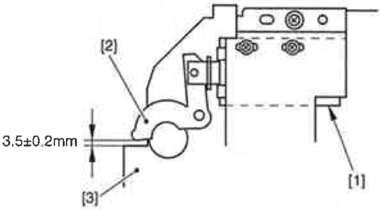


Figure 7-257 (rear)

15 Adjusting the Position of the Duplexing Unit Pick-Up Roller Releasing Solenoid (SL8)

1) Remove the pick-up assembly.
2) Lift the lever [1] as shown, and let the pick-up roller [2] drop on its own weight.
3) Adjust the position of the solenoid so that the distance L is 43 ±1 mm when the plunger is pushed in.

Make adjustments while the pin [4] is in contact with the bottom end of the long hole.

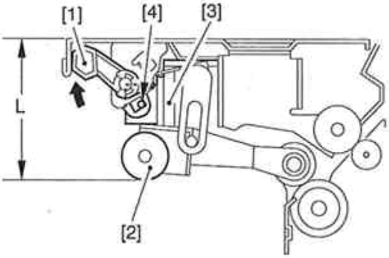


Figure 7-258

16 Adjusting the Position of the Delivery Paper Deflecting Plate Solenoid (SL14)

1) Place the delivery assembly upright on a flat surface.
2) Fix the solenoid in position where the arm [2] hits the stepped screw [3] and stops with the arm lifted and the plunger of the solenoid [1] pushed in.

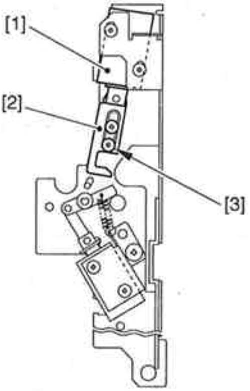


Figure 7-259 (rear)

17 Adjusting the Position of the Duplexing Unit Paper Deflecting Plate Solenoid (SL11)

1) Remove the duplexing unit.
2) Fix the solenoid in place with a mounting screw [3] after moving the solenoid to the delivery direction while the plunger [2] of the solenoid [1] is pushed in.

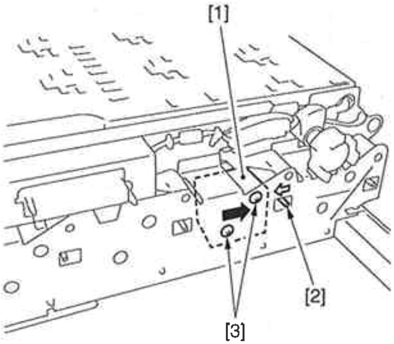


Figure 7-260 (rear)

18 Adjusting the Position of the Duplexing Unit Stopper Plate Solenoid (SL12)

Install the solenoid [3] so that the distance between the shutter plate [1] and the pin [2] is 0.5 mm when the plunger of the solenoid is pushed in.

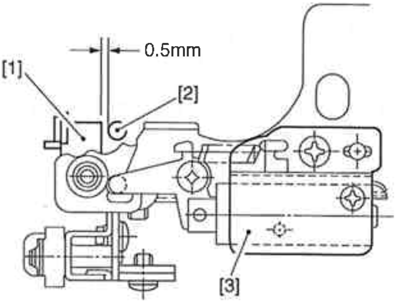


Figure 7-261 (rear)

19 Adjusting the Position of the Duplexing Unit Stacking Assembly Paper Guide Plate

1) Select A4R or LTR-R, and copy on the first side of a two-sided copy.
2) Slide out the duplexing unit to the front.
3) Measure the distance L of the paper guide plate [1].
   A4R: L = 211 ±0.3 mm
   LTR-R: L = 217 ±0.3 mm

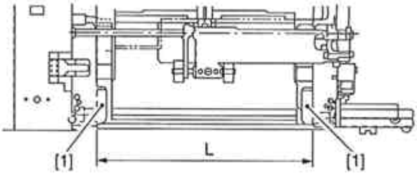


Figure 7-262

4) If the measurement is outside the standards, remove the duplexing unit front cover.
5) Loosen the screw [2], and turn the adjusting screw [3]; then, adjust the position of the paper guide plate home position sensor.

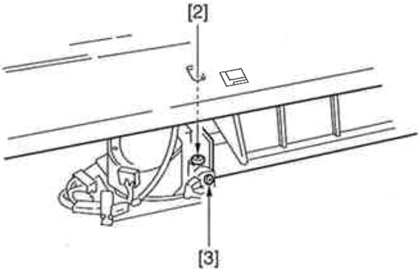


Figure 7-263

20 Adjusting the Position of the Duplexing Unit Feeding Roller Solenoid (SL13)

Let the feeding roller drop to the bottom of the duplexing unit stacking assembly on its own weight.

At this time, fix the solenoid [3] so that the end-to-end distance between the lever [1] and the arm [2] is 1.5 ±0.5 mm when the plunger of the solenoid is pushed.

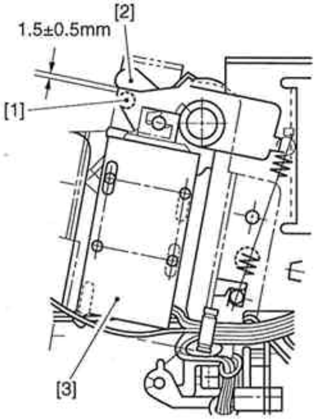


Figure 7-264

21 Attaching the Timing Belt for the Duplexing Unit Stacking Assembly Paper Guide Plate

Install the gear [1] with the paper guide plate fully open.

Install the timing belt [3] to the gear 1 and the pulley [2].

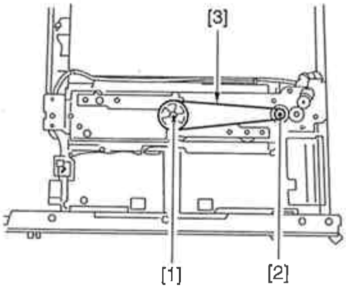


Figure 7-265

22 Adjusting the Position of the Separation Claw Solenoid (SL15)

1) Place the delivery assembly upright.
2) Fix the solenoid in place where the distance between the E-ring [3] and the resin washer [4] is 3.5 ±0.5 mm when the plunger of the solenoid [1] is pulled by the spring [2].

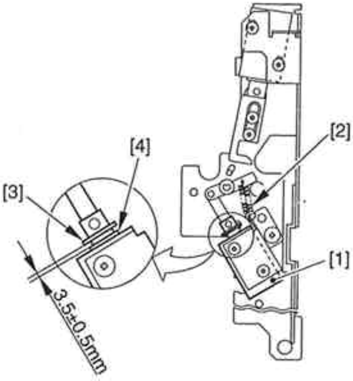


Figure 7-266

23 Adjusting the Position of the Upper Fixing Web Take-Up Solenoid (SL3)

1) Keep the delivery assembly upright.
2) Fix the solenoid in place so that the vertical distance between the top end of the solenoid shaft [2] and the top end of the solenoid lever [3] is 16.3 ±0.2 mm when the plunger of the solenoid [1] is pushed.

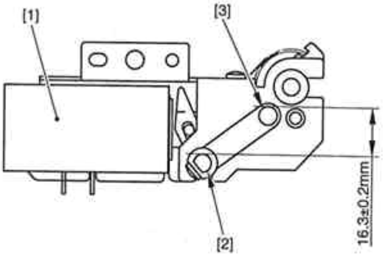


Figure 7-267

24 When Replacing the Registration Roller Unit

You must make adjustments as follows whenever you have replaced the registration roller unit:

1) Replace the registration roller unit.
2) Make several copies of the Test Chart, and check the leading edge margin, left/right margin, and for skew movement.
3) If the leading edge margin is not as specified, make adjustments. (See II-A.)
4) If skew movement is noted, make adjustments as instructed in the section that follows.

25 Correcting Skew Movement (slope of the registration roller unit)

If you must correct skew movement after replacing the registration roller unit, perform the following:

1) Remove the transfer right cover and the front right cover.
2) Loosen the two mounting screws [1] on the registration roller unit.

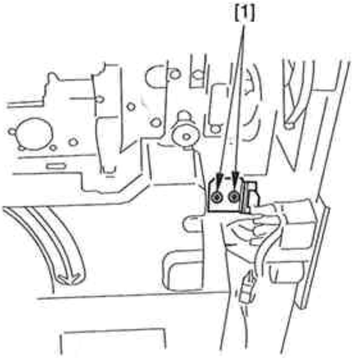


Figure 7-268

3) Adjust the screw [2] used to position the fixing plate.
   - The leading edge of paper will be toward the front in relation to the movement of feeding (CW).

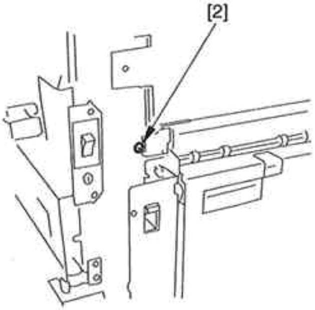


Figure 7-269

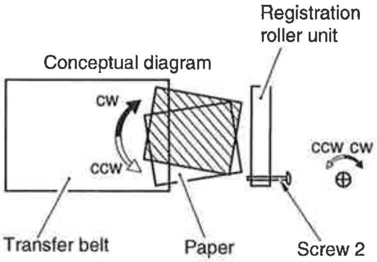

Registration roller unit
Conceptual diagram
CW
CCW
CCW CW
Transfer belt
Paper
Screw 2

Figure 7-270

4) After making adjustments, fully tighten the screw loosened in step 2).

H. Laser Exposure System

1 When Replacing the Laser Unit

1) Perform laser focus adjustment.
2) Perform laser power adjustment.
3) Perform laser intensity adjustment.

2 When Replacing the Video Controller PCB

Nothing in particular.

3 When Replacing the BD Unit

Before removing the BD unit, be sure to mark its position with a scriber.

1) Using 'FUNC > INSTALL', set 'IMG-REG' to '0'.
2) Turn off the power switch, and replace the BD unit.
3) After replacement, execute 'FUNC > INSTALL > REG-APER' in service mode. (If a BD error 'E100' occurs, check the position of the unit, and execute 'REG-APER' once again.)
4) Execute 'FUNC > IMG-REG > AUTO-ADJ' in service mode.
5) Using 'FUNC > INSTALL' in service mode, set 'IMG-REG' to '1'.

4 Adjusting the Laser Power

You must always adjust the laser power whenever you have replaced the laser unit.

a. Required Tools

- Laser Power Checker (FY9-4013)
- Digital Multimeter (CK-0436)

The output of the Laser Power Checker may change over time; have it calibrated once a year at the service station using a special calibration tool.

1) If you have replaced the laser unit for C/Bk, position the analog processor unit as indicated in Figure 7-271.

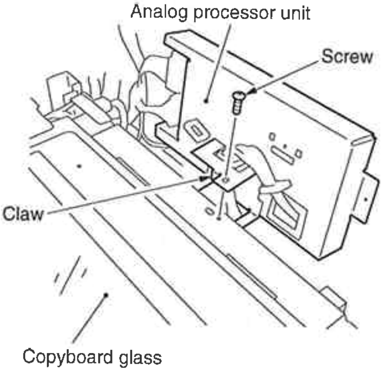


Figure 7-271

2) Turn on the power switch.

3) Open the laser power checker inlet cover.

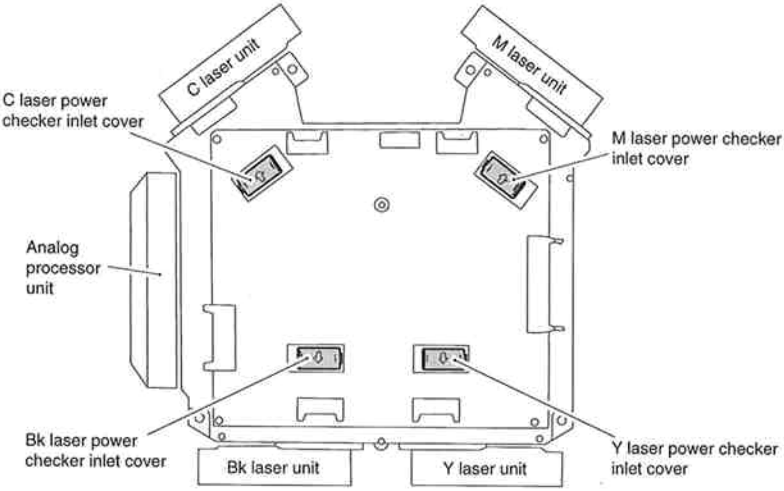

C laser unit
M laser unit
C laser power checker inlet cover
M laser power checker inlet cover
Analog processor unit
Bk laser power checker inlet cover
Bk laser unit
Y laser unit
Y laser power checker inlet cover

Figure 7-272

4) Set the laser power checker switch to '2'.
5) Insert the laser power checker with its light-receiving face oriented as indicated in Figure 7-273.

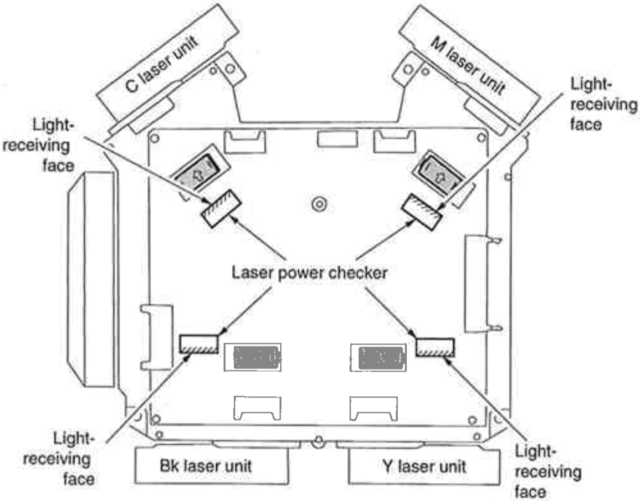

C laser unit
M laser unit
Light-receiving face
Light-receiving face
Laser power checker
Light-receiving face
Bk laser unit
Y laser unit
Light-receiving face

Figure 7-273

6) Insert the lead wire of the laser power checker into the Digital Multimeter, and set it to the 200 mV range.
7) Start service mode, and execute 'POWER' and '1/2 POWER' of '#6 LASER' under 'FUNC'.
8) Check to make sure that the reading of the Digital Multimeter is 'POWER: 44.8 ±0.4 mV, 1/2 POWER: 20.0 ±0.2 mV'. If the readings are not as specified, make the following adjustments:

Making Adjustments

1) Turn the volumes VR1 through VR8 on the laser unit fully clockwise. (Do not turn VR9.)

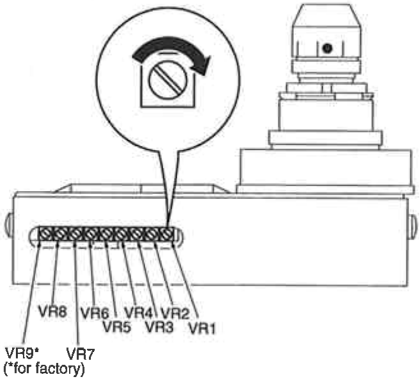


Figure 7-274 C/Bk Laser Unit

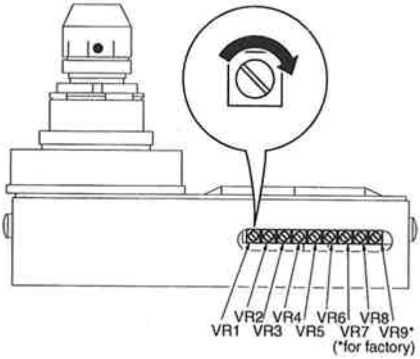


Figure 7-275 Y/M Laser Unit

2) Start service mode, and execute '1/2 POWER' of '#LASER' under 'FUNC'.
3) Turn VR1 counterclockwise so that the reading of the Digital Multimeter is '20.0 ±0.2 mV'. (Take care not to turn too fast; the reading will increase abruptly at a certain point.)
4) Press the Stop key to stop the laser output.
5) Execute 'POWER' of '#6 LASER' under 'FUNC'.
6) Turn VR2 counterclockwise so that the reading of the Digital Multimeter is '44.8 ±0.4 mV'. (Take care not to turn too fast; the reading will increase abruptly at a certain point.)
7) Take notes of the reading of 'POWER' after adjustment.
8) Press the Stop key to stop the laser output.
9) Perform laser intensity adjustment.

- When turning the VR, turn it slowly while referring to the reading of the Digital Multimeter; do not increase the power excessively.
- Turning the VR clockwise decreases the laser output.
- Do not exceed the setting recorded on the label; otherwise, the laser diode may become damaged.

5 Adjusting the Laser Intensity

Be sure to adjust the laser power before making the following adjustments:

1) Start service mode, and execute 'BIAS' of '#6 LASER' under 'FUNC'.
2) Take notes of the reading of the Digital Multimeter.
3) Press the Stop key to stop the laser output.
4) Compute the target value according to the following formula:

Formula	Results
P00 target: (POWER–BIAS)×0.008+BIAS=	
PFF target: (POWER–BIAS)×0.9+BIAS=	

Table 7-202

5) Execute '400-P00' of '#6 LASER ' under 'FUNC'.
6) Turn VR3 counterclockwise so that the reading of the Digital Multimeter is the P00 target value.
7) Press the Stop key to stop the laser output.
8) Execute '400-PFF' of '#6 LASER' under 'FUNC'.
9) Turn VR4 counterclockwise so that the reading of the Digital Multimeter is the PFF target value.
10) Press the Stop key to stop the laser output.
11) Adjust the volumes according to the type of laser unit as follows:
    For Y, adjust VR7 and VR8 using '266-P00' and then '266-PFF'.
    For M/C, adjust VR5 and VR6 using '200-P00' and then '200-PFF'.
    For Bk, adjust VR5 through VR8 using '200-P00', '200-PFF', '266-P00', and then '266-PFF'.

Item	400_P00	400_PFF	200_P00	200_PFF	266_P00	266_PFF
VR	VR3	VR4	VR5	VR6	VR7	VR8

Table 7-203

12) Press the Reset key to end service mode.
13) Turn off the power switch.
14) Remove the laser power checker, and install the inlet cover.

6 Laser Focus Adjustment

1) Check to make sure that the marking [1] on the lens assembly matches the marking [2] on the lens mount (standard position).

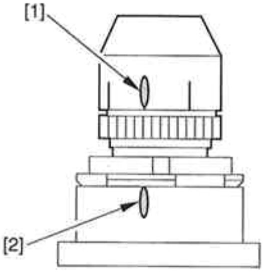


Figure 7-276

If the unit is not in standard position, loosen the locking nut [3], and turn the lens assembly until the distance to the end [4] of the lens assembly is 27.3 ±0.2 mm, i.e., where the markings match.

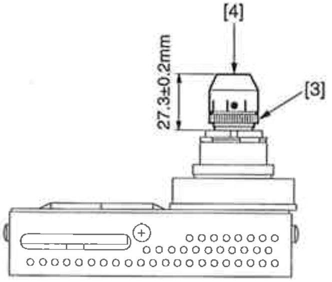


Figure 7-277

2) Perform focusing adjustments by turning the lens assembly once again according to the values recorded on the label. For instance, if the value is "+2/8," turn the lens assembly in the positive direction (counterclockwise when viewing from the end of the lens assembly) over two notches.

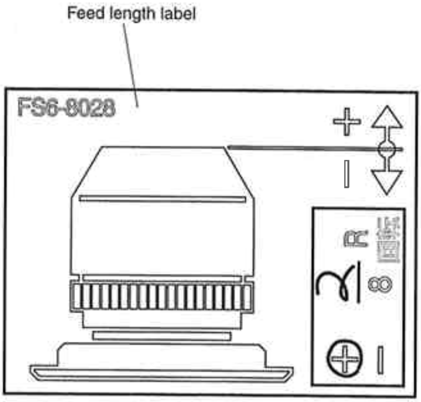


Figure 7-278

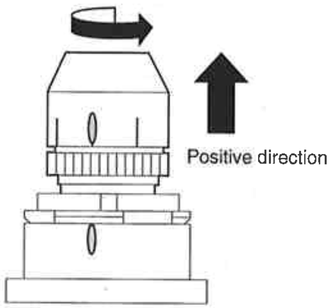


Figure 7-279

3) Tighten the locking nut, and fix the position of the lens in place.

I. Fixing Assembly-Related Parts

1 Points to Note When Replacing the Fixing Heater

- Do not touch the surface of the heater.

REF.

Neither fixing heater (upper/lower) has any specific front/rear orientation.

2 Adjusting the Nip (fixing pressure adjusting nut)

- Check to make sure that the nip width is as indicated in Table 7-204.
  If not, turn the adjusting screw to adjust.

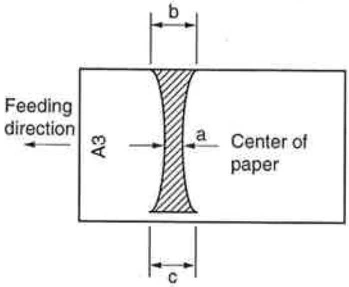


Figure 7-280

b and c represent points 10 to 15 mm from the edges.

Dimension	Measurements*
a	7.5 ±0.5 mm
| b–c |	0.5 mm or less
b–a c–a	0.5 mm or less

* Taken when the upper and lower rollers are sufficiently heated.

Table 7-204

Measuring the Nip Width

If the fixing rollers are cool, wait until the standby period is over, wait an additional 15 min, and make 20 copies before taking measurements.

Taking Measurements

1) Start service mode.
2) Select 'NIP-CHK' of 'FUSER' under 'FUNC'.
3) Select 'NIP-CHK=1'.
4) Press the Start key to execute. (The operation will stop automatically.)

J. Electrical ADJUSTMENT

1 When Replacing Major Parts

a. When Replacing the ROM on the DC Controller PCB or the Reader Controller PCB

(The term "reader controller" or the "DC controller" within parentheses indicates work unique to the respective PCB.)

1) Turn on the power switch.
2) Record the settings of the user mode. (reader controller)
3) Set 'IMG-REG' on the second page of the INSTALLL screen under 'FUNC' in service mode from '1' to '0'. (DC controller)
4) Turn off the power switch.
5) Disconnect the power plug from the power outlet. (DC controller)

> ⚠ You must always disconnect the power plug from the outlet; merely turning off the power switch will not cut the power to the DC controller.

6) Replace the two ROMs of the DC controller and the six ROMs of the reader controller.
7) Connect the power plug to the power outlet, and turn on the power switch.
8) Execute 'RAM-CLR' of 'R-CON' under 'FUNC' in service mode so that the power switch will automatically be off.
9) Turn on the power switch so that 'E350' will be indicated. (reader controller)
10) Execute 'AUTO-ADJ' of 'CCD' under 'FUNC' in service mode. (about 8 min; reader controller)
11) If a projector is installed, execute 'PROJ-CCD' of 'PROJ-ADJ' under 'FUNC' in service mode. (reader controller)
12) Compare the value in A of the service label and the service mode value; if different, or if you replaced the DC controller PCB as a whole, perform the steps for initializing the RAM on the DC controller PCB shown below. (DC controller)
13) Set 'IMG-REG' of 'INSTALL2' under 'FUNC' in service mode from '0' to '1'. (DC controller)
14) Enter new user mode settings and the value of B of service label. (reader controller)
15) Turn off and on the power switch.
16) Execute auto gradation correction, and set 'PASCAL' under 'ADJSUT' in service mode to '1'.

b. When Replacing the Reader Controller PCB

1) Initialize the RAM on the reader controller PCB. (See the appropriate instructions.)
2) Turn off and on the power switch.

c. When Replacing the DC Controller PCB

1) Start service mode, and check to make sure that 'DISP>BLT-DRFT>BELT-POS' is 'CENTER'; if not, move the transfer belt to the center.
2) Turn off the power switch.
3) Disconnect the power plug from the power outlet.

> ⚠ Be sure to disconnect the power plug from the power outlet. Merely turning off the main switch will not cut the power.

4) Replace the DC controller PCB.
5) Turn on the power switch.
6) Initialize the RAM on the DC controller PCB. (See the appropriate instructions.)
7) Turn on and then off the DC controller PCB.

d. Initializing the RAM on the DC Controller PCB

1) Start service mode, and check to make sure that 'BELT-POS' of 'BLT-DRFT' under 'DISP' is 'CENTER'; if not, move the transfer belt to the center.
2) Execute 'FUNC>DC-CON>RAM-LR' in service mode.
3) Turn off the power switch, and disconnect and then connect the power plug (so that the RAM will be cleared).
4) Turn on the power switch.
5) If you have replaced the DC controller PCB, replace the developers of each color according to the instructions chapter 7. II. Standards and Adjustment, E.1 Replacing the Developer.
6) Enter the value of A recorded on the service label. (If you have changed other service mode settings related to the DC controller, enter such settings as well.)
7) Turn off and then on the power switch.
8) Execute 'FUNC>INSTALL (second screen) >REG-APER' in service mode.

Service Mode Settings Related to the DC Controller PCB

ADJUST	Settings on PASCAL screen Settings on FEED-ADJ screen Settings on ENV-SET screen Settings on HV-TR Y/M/C/K screen Settings on HV-SP screen Settings on HV-FS screen Settings on HV-EL screen
FUNC	Settings on DC-CON screen Settings on P-UP-TMG Settings on P-THICK screen Settings on IMG-REG screen Settings on FUSER screen
OPTION	Settings on P-OPT screen (except ON-SET)

The above settings on the screens of service mode are cleared when the RAM on the DC controller PCB is initialized.

e. Initializing the RAM on the Reader Controller PCB

1) Record the settings of user mode.
2) Execute 'FUNC>R-CON>RAM-CLR' in service mode. (The power switch will automatically turn off.)
3) Turn on the power switch. ('E350 will be indicated.)
4) Execute 'FUNC>CCD>AUTO-ADJ' in service mode. (about 8 min)
5) If a projector is installed, execute 'FUNC'> PROJ-ADJ>PROJ-CCD' in service mode.
6) Enter any new user mode settings and the settings recorded in B of the service label. (If you have changed any other service mode settings related to the reader controller, enter such settings.)

Service Mode Settings Related to the Reader Controller

ADJUST	Settings on ADJ-XY screen Settings on DOC-REC screen Settings on PROJ screen Settings on ED/RF screen Settings on COL-ADJ screen Settings on ADJ-MIS screen Settings on PRJ-ADJ
OPTION	Settings on R-OPT screen Settings of ON-SET on R-OPT screen Settings on REMOTE screen Settings on DECK screen

The above service mode settings are cleared when the RAM on the reader controller is initialized.

f. When Replacing the Image Position Correction CCD Unit

1) After replacing the image position correction CCD unit, execute 'FUNC>INSTALL (2nd screen)>REG-APER' in service mode.
   Thereafter, be sure to turn off and on the power switch to correct the image position.

g. When Replacing the Paper Thickness Sensor

1) Check the settings (A through E) recorded on the label attached to the paper thickness sensor you are replacing, and record them under 'SNSR-RNK' on the service label. At this time, you need not perform step 3) and the subsequent steps if the settings are the same as the settings under 'FUNC>P-THICK>SNSR-RNK' of service mode.
2) Replace the power thickness sensor.
3) Enter the settings you recorded on the service label in step 1) under 'FUNC>P-THICK>SNSR-RNK' in service mode. (Each press on 'SNSR-RNK' toggles the settings A through E.)
4) Check to make sure that the values of 'P-TH-1' and 'P-TH-2' are identical to the values recorded on the service label; if different, enter the correct values using 'FUNC-DC-CON (fifth screen)>P-TH-1/2' in service mode.
5) End service mode.

h. After Replacing the Pick-Up Motor/Pick-Up Unit

1) Place three or more A4 or LTR sheets of paper in the cassette (upper, lower).
2) Select 'FUNC > P-UP-TMG' in service mode.
3) Execute 'PK-ADJ-U' three times.
   - A value near '186' will be indicated under 'DATA-A' and 'PUDT-U'.
4) Press 'D-SEND-U' to write the adjustment data in RAM.
5) Execute 'PK-ADJ-L' three times.
   - A value near '104' will be indicated under 'DATA-L' and 'PUDT-L'.
6) Press 'D-SEND-L' to write the adjustment data in RAM.
7) Write the value of 'PUDT-U/L' on the service label.
8) End service mode.

2 Checking the Environment Measurement PCB

The condition of the environment measurement PCB and the environment sensor is checked using the environment measurement checking tool (TKN-0457) and the environment checking tool (TKN-0456).

a. Checking the Environment Measurement PCB

1) Turn off the power switch.
2) Remove the multitray covers 1 and 2.
3) Remove the environment sensor from the environment measurement PCB, and insert the environment measurement checking tool (TKN-0457) in its place.
4) Turn on the power switch.
5) Set the meter to the 30 VDC range, and check to make sure that the voltage of J1-1 (+) and J1-2 (–) on the environment measurement PCB is 24 V ±2.4V. If not, check the DC power supply PCB (DCP1).
6) Start service mode, and select 'DISPLAY'.
7) Check the temperature and humidity on the ANALOG screen.
   BODY °C .... 25 ±5
   BODY % .... 40 ±10
8) Check to make sure that the reading is within specification.
   If not, go to step 9). If the reading is as indicated, go to step 14).
9) Press the Reset key, and turn off the power switch.
10) Disconnect J1 of the environment measurement PCB.
11) Turn on the power switch; start service mode, and select 'DISPLAY'.
12) Check the temperature and humidity on the ANALOG screen.
    BODY °C .... 25 ±5
    BODY % .... 36 ±10
13) Check to make sure that the reading is as indicated.

REF. If the reading is not as indicated, suspect a fault in the DC controller.

14) Press the Reset key.
15) Turn off the power switch.
16) Connect J1 of the environment measurement PCB.
17) Remove the environment measurement sensor from the environment measurement PCB, and insert the environment sensor.
18) Install all covers.

b. Checking the Environment Sensor

1) Check the environment PCB.
2) Turn on the power switch, and leave it on for 5 min.
3) Start service mode, and select 'DISPLAY'.
4) Check the temperature and humidity on the ANALOG screen.
   BODY °C .... data A1
   BODY % .... data A2
5) Press the Reset key, and turn off the power switch.
6) Remove the environment sensor from the environment measurement PCB, and insert the environment sensor calibration tool (TKN-0456) in its place.
7) Turn on the service switch, and leave it on for 5 min.
8) Start service mode, and select 'DISPLAY'.
9) Check the temperature and humidity on the ANALOG screen.
   (data B)
   BODY °C .... data B1
   BODY % .... data B2
10) Compare data A and data B
    - The difference between data A1 and data B1 is 0 ±5.
    - The difference between data A and data B is 0 ±20.

    If the difference is outside the specification, replace the environment sensor.
11) Press the Reset key, and turn off the power switch.
12) Remove the environment sensor calibration tool from the environment measurement PCB, and insert the environment sensor.
13) Install all covers.

> The environment sensor calibration tool (TKN-0456) is adjusted with high precision at the factory. Keep it in a sealed case with a drying agent.

3 Checking the High Voltage Control System

a. Outline

If an image fault occurs, you must first determine whether the cause is the latent static formation block which includes the photosensitive drum and the potential control system or the developing/transfer system.

The CLC1000's high-voltage is controlled to a specific level using the environment sensor and the potential sensor.

Sensor	Environment sensor
Environment sensor	Primary grid bias Transfer blade bias Separation charging bias
Potential sensor	Primary grid bias Developing bias

b. Target Contrast Potential

The primary grid bias or the developing bias control mechanism may be checked by canceling the auto setting mechanism by the environment sensor for target contrast potential.

1) Select 'VCONT' of 'ADJ-MISC' under 'ADJUST' in service mode.
2) Select an appropriate value from the target contrast voltage levels in the following table, and enter it.

	Y	M	C	K
0	Auto	Auto	Auto	Auto
1	390.00	365.00	370.00	420.00
2	390.00	365.00	370.00	420.00
3	390.00	365.00	370.00	420.00
4	370.00	345.00	355.00	410.00
5	340.00	325.00	335.00	390.00
6	310.00	295.00	315.00	380.00
7	295.00	275.00	290.00	370.00
8	245.00	225.00	225.00	330.00

3) Execute 'FUNC>EPC' in service mode.
4) Make copies, and check the images.
- If the image is better, suspect a fault in the environment sensor or the environment measurement PCB.

5) Return the setting 'ADJUST>ADJ-MISC>VONT' in service mode to '0'.

4 Checking the Photointerrupters

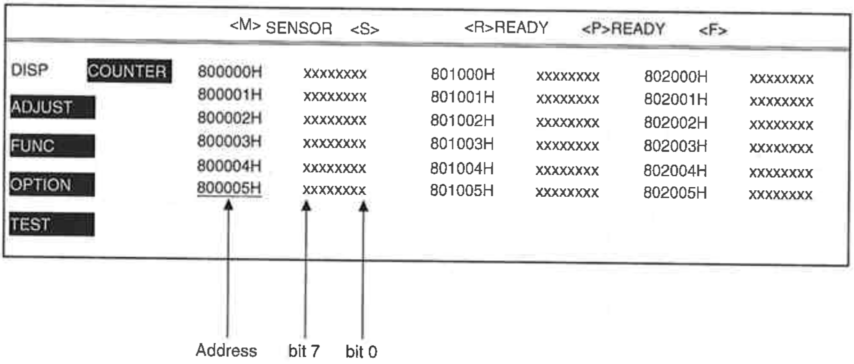
The CLC1000 allows you to use a conventional meter or service mode when checking its photointerrupters.

1. Using a Tester

1) Set the tester to the 30VDC range.
2) Connect the – probe of the tester to J101-7 (GND) of the DC control PCB.
3) Connect the + probe to the terminals (on the DC controller PCB or the deck controller PCB) shown on the pages that follow.
4) Make checks according to the instructions given.

2. Using Service Mode

1) Start service mode.
2) Press 'DISP'.
3) Press 'SENSOR'.
4) Make checks as indicated next page.



```
                    <M> SENSOR   <S>           <R>READY    <P>READY    <F>
DISP     COUNTER  800000H   xxxxxxxx    801000H   xxxxxxxx    802000H   xxxxxxxx
ADJUST            800001H   xxxxxxxx    801001H   xxxxxxxx    802001H   xxxxxxxx
                  800002H   xxxxxxxx    801002H   xxxxxxxx    802002H   xxxxxxxx
FUNC              800003H   xxxxxxxx    801003H   xxxxxxxx    802003H   xxxxxxxx
                  800004H   xxxxxxxx    801004H   xxxxxxxx    802004H   xxxxxxxx
OPTION            800005H   xxxxxxxx    801005H   xxxxxxxx    802005H   xxxxxxxx

TEST
```

Sensor	Name	Meter probe (+) Service mode	Checks
PS 1	Registration paper sensor	J2207A-13 801000 bit 0	During copying, • '1' if paper is present over the registration paper sensor. • '0' if absent.
PS 2	Multifeeder lifter sensor (upper)	J2207B-5 801004 bit 2	After the multifeeder has been selected and the Start key has been pressed, '1' when the lifter of the multifeeder moves up.
PS 3	Multifeeder lifter sensor (lower)	J2207B-11 801004 bit 3	During standby, '1' if the lifter of the multifeeder is down.
PS 4	Multifeeder paper sensor (front)	J2207B-12 801005 bit 0	During standby, '1' when paper is set in the multifeeder.
PS 5	Multifeeder paper sensor (rear)	J2207B-13 801005 bit 1	During standby, '1' when paper is set in the multifeeder.
PS 6	Oil level sensor	J2209A-13 802002 bit 2	• '1' if the arm is over the sensor. • '0' otherwise.
PS 8	Holding tray front feeding sensor 1	J2214B-2 801001 bit 6	• '1' if paper is present over the holding tray front feeding sensor. • '0' if absent.
PS 9	Holding tray front feeding sensor 2	J2214B-5 801001 bit 7	• '0' if paper is present over the holding tray front feeding sensor 2. • '1' if absent.
PS10	Transfer belt cleaning web rotation sensor	J2218A-7 802003 bit 7	Slide out the transfer unit, and open the transfer belt assembly. Close the transfer belt assembly by blocking the light of PS10 by paper; and set the transfer unit to the copier. • '1' when the power is ON. • '0' when the light is not blocked.
PS11	Transfer belt cleaning web level sensor	J2218A-8 802002 bit 3	Slide out the transfer unit, and open the transfer belt assembly. Close the transfer belt assembly by blocking the light of PS11 by paper; and set the transfer unit to the copier. • '1' when the power is ON. • '0' when the light is not blocked.

Sensor	Name	Meter probe (+) Service mode	Checks
PS 12	Transfer belt lifter sensor 1	J2218A-5 802003 bit 0	• '1' when the transfer belt is moved down under 'FUNC' in service mode. • '0' when moved up.
PS 13	Transfer belt lifter sensor 2	J2218A-6 802003 bit 1	• '0' when the transfer belt is moved down under 'FUNC' in service mode. • '1' when moved up.
PS 14	Post registration paper sensor	J2218A-13 801001 bit 0	During copying, • '1' when paper is present over the post registration paper sensor. • '0' when absent.
PS 15	Separation sensor	J2218B-1 801001 bit 1	• '1' when paper is present over the separation sensor. • '0' when absent.
PS 16	Transfer belt home position sensor	J2219B-1 802003 bit 6	During standby, • '1' when the transfer belt joint detecting seal is present over the PS16. • '0' when absent.
PS 17	Transfer belt edge sensor 1 (front)	J2219B-2 802003 bit 2	During standby, • '1' when the detecting lever is present over PS17. • '0' when absent.
PS 18	Transfer belt edge sensor 1 (rear)	J2219B-3 802003 bit 3	During standby, • '1' when the detecting lever is present over PS18. • '0' when absent.
PS 19	Transfer belt edge sensor 2 (front)	J2219B-7 802003 bit 4	During standby, • '1' when the detecting lever is present over PS19. • '0' when absent.
PS 20	Transfer belt edge sensor 2 (rear)	J2219B-8 802003 bit 5	During standby, • '1' when the detecting lever is present over PS20. • '0' when absent.
PS 21	Pick-up vertical path 1 sensor	J2222B-5 801000 bit 1	• '1' when paper is present over the pick-up vertical path 1 sensor. • '0' when absent.
PS 22	Paper deck connection sensor	J2222B-6 800004 bit 0	'1' when the paper deck is set in the copier.

Sensor	Name	Meter probe (+) Service mode	Checks
PS 23	Cassette 1 paper sensor	J2222B-7 801004 bit 0	During standby, slide out the cassette 1. • '1' when the cassette is slid in with paper. • '0' when the cassette is slid in without paper.
PS 24	Cassette 1 lifter sensor	J2222B-8 801005 bit 4	During standby, slide out the cassette 1. • '1' when the cassette is slid out. • '0' when the cassette is slid in.
PS 25	Pick-up vertical path 2 sensor	J2222B-9 801000 bit 2	• '1' when paper is present over the pick-up vertical path 2 sensor. • '0' when absent.
PS 26	Pick-up vertical path 3 sensor	J2222B-12 801000 bit 3	• '1' when paper is present over the pick-up vertical path 3 sensor. • '0' when absent.
PS 27	Cassette 2 lifter sensor	J2222B-10 801004 bit 1	During standby, • '1' when the cassette 2 is slid out. • '0' when the cassette 2 is slid in.
PS 28	Cassette 2 paper sensor	J2222B-11 801005 bit 5	During standby, • '1' when the cassette 2 is slid in with paper. • '0' when the cassette 2 is slid in without paper.
PS 29	Duplexing unit stacking guidehome position sensor	J2224B-8 801004 bit 6	During standby, slide out the duplexing unit, and remove the front cover. • '1' when the duplexing unit is slid in and the light-blocking plate is over the sensor. • '0' otherwise.
PS 30	Holding tray paper sensor 1	J2224A-5 801002 bit 0	During standby, • '0' when paper is put over the holding tray paper sensor 1. • '1' otherwise.
PS 31	Holding tray paper sensor 2	J2224A-8 801005 bit 7	During standby, • '0' when paper is put over the holding tray paper sensor 2. • '1' otherwise.
PS 32	Delivery vertical path sensor 2	J2211A-9 801001 bit 4	• '1' when paper is present over the delivery vertical path sensor 2. • '0' when absent.

Sensor	Name	Meter probe (+)	Checks
		Service mode	
PS 33	Duplexing reversal sensor	J2211A-10	'1' when paper is present in the duplexing reversing assembly. • '0' when absent.
		801001 bit 5	
PS 34	Delivery sensor	J2211A-11	• '1' when paper is put over the delivery sensor. • '0' otherwise.
		801001 bit 3	
PS 35	Internal delivery sensor	J2211B-5	• '1' when paper is put over the internal delivery sensor. • '0' otherwise.
		801001 bit 2	
PS 36	Upper web level sensor	J2209A-2	During standby, • '1' when the detecting lever is put over the sensor. • '0' otherwise.
		802002 bit 3	
PS 37	Scanner home position sensor	Reader unit controller J1306A-5	During standby, remove the copyboard glass. • '1' when the light-blocking plate is put over PS37.
		–	
PS 38	Delivery vertical path sensor 1	J2211B-8	• '1' when paper is put over the delivery vertical path sensor 1. • '0' otherwise.
		801002 bit3	
PS 39	Pattern reading assembly shutter closed sensor	J2241-4	Execute 'FUNC > F-MISCp > MTR' in service mode to operate the shutter. PS39: '1' at first; '0' when operation starts; then, '1' in about 10 sec. PS40: '0' at first; '1' about 5 sec after operation; then, '0' once again.
		804004 bit 6	
PS 40	Pattern reading assembly shutter open sensor	J2241-7	
		804004 bit 7	
PS 8001	Paper deck paper absent sensor	J2223A-7	• '1' if paper is in the paper deck. • '0' otherwise.
		801005 bit 6	

III. TROUBLESHOOTING IMAGE PROBLEMS

A. Initial Checks

1. Checking the Site of Installation

a. Make sure that the voltage at the power source is as rated (±10%).

b. Make sure that the site is not subject to high temperature/humidity (near a water faucet,water boiler, humidifier) and is not cold, not close to a source of fire, and not subject to dust.

c. Make sure that the site is not subject to ammonium gas.

d. Make sure that the site is free of direct rays of the sun; otherwise, curtains are provided.

e. Make sure that the room is well ventilated.

f. Make sure that the machine is kept level.Make the above checks to see if the site meets the requirements.

2. Checking the Originals

Try to find out whether the problem is due to the type of original used or to the machine.

a. Check the density of the originals; for example) a diazocopy original or an original with transparency can produce copies that tend to be mistaken for "foggy copies"; and originals prepared in light pencil tend to produce copies that tend to be mistaken for "light image copies."

3. Checking the Copyboard Cover, Copyboard Glass, and Standard White Plate

Check the copyboard cover,copyboard glass, and standard white plate for dirt. Clean the part if soiled, and replace the part if damage is found.

4. Checking the Charging Assemblies

a. Check each of the charging assemblies for dirt. Check the charging wire/grid plate for a fault (damage, deformation).

b. Check shield plate of each charging assembly. (If necessary, dry wipe the part with lint-free paper; then, use alcohol. If the dirt cannot be removed, replace the part.)

c. Check the height of each charging wire.

d. Make sure that each charging assembly is properly set.

e. Check the charging spring (especially of the separation charging assembly) for rusting.

5. Checking the Developing Assembly

a. Check to make sure that the surface of the developing cylinder is covered with a uniform coating of toner.

6. Checking the Paper

a. Check if the paper is of a type recommended by Canon.

b. Check if the paper is moist.
Try making copies using fresh paper.

7. Checking the Periodically Replaced Parts

a. Check the periodically replaced parts against the Scheduled Servicing Chart, and replace those that reached the end of their lives.

8. Others

When a machine is brought from a cold to a warm place in winter, its inside can start to develop condensation, leading to various problems.

a. Condensation on the original illuminating system or the laser exposure system (glass, mirror, lens) causes light or dark images.
b. Condensation in the charging system can cause leakage.
c. Condensation in the pick-up system or on the feeding guide plate can cause feeding problems.

If condensation is noted, dry wipe the part or leave the machine powered for 10 to 20 minutes.

If uneven density (difference in density between front and rear), light images, or fogging is noted, perform the "Image Adjustment Basic Procedure" first.

B. Standard Image

What is referred to as a "standard image" is an image in which the gray scale, color patches, and 3-color gradation scale are as follows when the Canon CA-1 Test Sheet is copied in four full colors.

1. Gray Scale

No. 1 (dark area) is more or less black and the density grows lighter with No. 8 (light) area being barely visible and No. 9 being white.

The color of the halftone area is more or less gray but is not appreciably yellowish or bluish.

2. Color Patches

Each color can be distinguished and is not appreciably different from its original color (Test Sheet).

3. Photo

The color balance is not appreciably different from the original.

4. 3-Color Gradation Scale

No. 8 is barely visible with No. 9 being white.

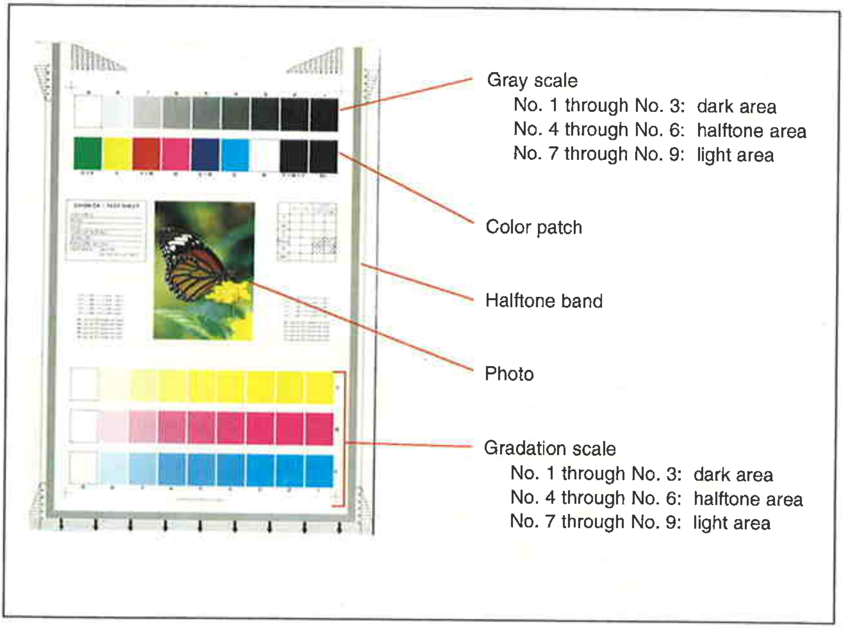
5. Halftone Band

The color is not appreciably different from the original (Test Sheet). Further, the band as a whole is not appreciably uneven*, and the color does not differ appreciably between left and right.

* Moire, if found, may be ignored.

6. Fogging

The white area must not be foggy.



Gray scale
No. 1 through No. 3: dark area
No. 4 through No. 6: halftone area
No. 7 through No. 9: light area

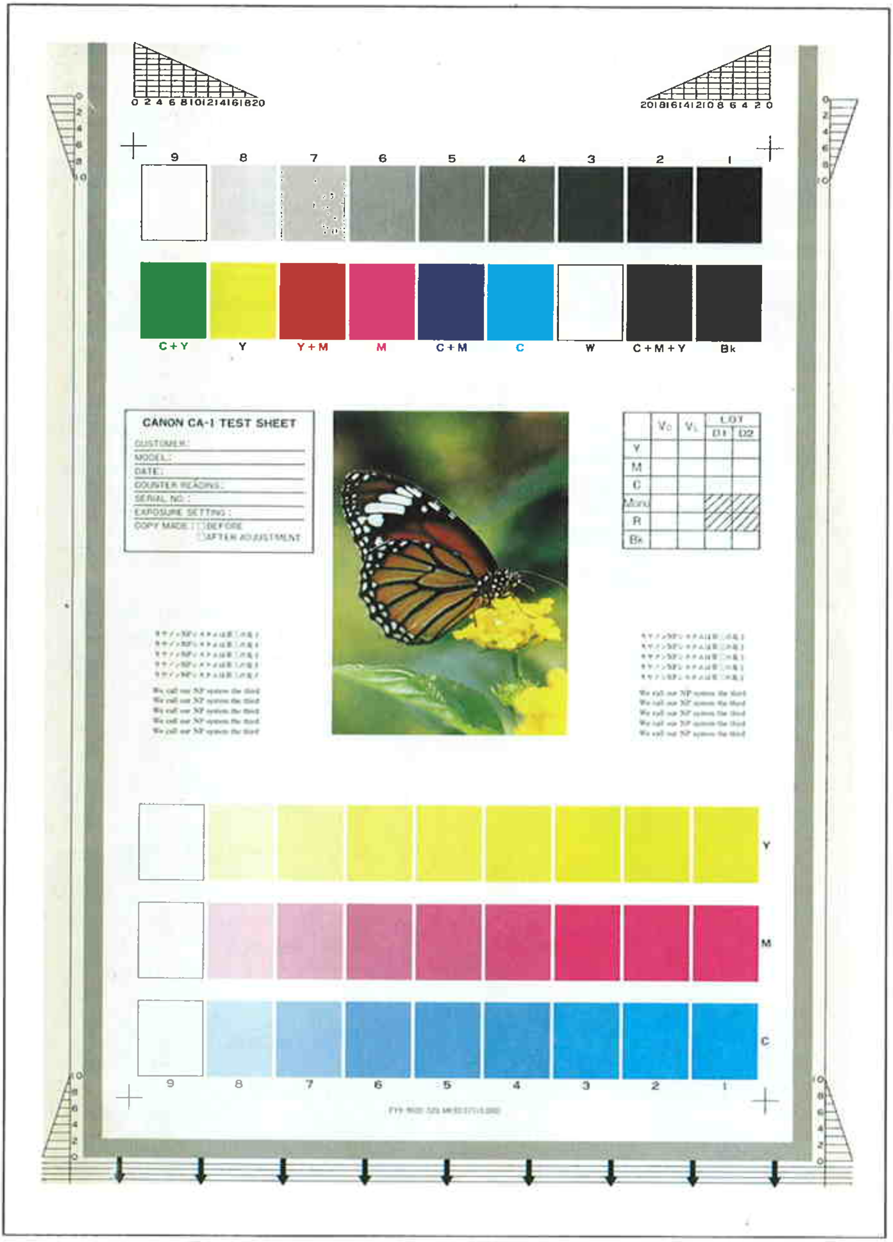
Color patch

Halftone band

Photo

Gradation scale
No. 1 through No. 3: dark area
No. 4 through No. 6: halftone area
No. 7 through No. 9: light area

Figure 7-301



CANON CA-1 TEST SHEET

CUSTOMER :

MODEL :

DATE :

COUNTER READING :

SERIAL NO. :

EXPOSURE SETTING :

COPY MADE : ☐BEFORE
☐AFTER ADJUSTMENT

	Vc	VL	LOT D1	LOT D2
Y				
M				
C				
Mono			▨	▨
R				
Bk				

0 2 4 6 8 10 12 14 16 18 20
20 18 16 14 12 10 8 6 4 2 0
9
8
7
6
5
4
3
2
1
C + Y
Y
Y + M
M
C + M
C
W
C + M + Y
Bk
Y
M
C

Figure 7-302 Standard Image Sample

C. Test Prints

The CLC1000 possesses nine types of test print patterns, enabling identification of an error in reference to each test print pattern.

If a fault on a copy made normally does not appear on a test print, you may suspect the original exposure system, CCD, analog processor, or image processor.

1. Selecting a Test Pattern

1) Set the copy count and paper size.
2) Start service mode. ($\boxed{*} \rightarrow \boxed{2}$, $\boxed{8} \rightarrow \boxed{*}$)
3) Press 'TEST'.
4) Select 'PG → TYPE'.
5) Enter the appropriate PG number using the keypad.
6) Set the color mode.
    - 'COLOR-Y/M/C/K=1' selects a color.
      *Effective when 'PGTYPE=2, 3, 4, 5, or 6.
7) Set the density of the test print*.
    - Set the density using the 'DENS-Y/M/C/K' key.
      *Effective when 'PGTYPE=5'.
8) Press the Start key.

Be sure to return the setting of 'PGTYPE' to '0' when you have finished checks using test prints.

PGTYPE	Description
0	Image from CCD (regular copying)
1	For R&D
2	256 colors
3	256 gradations
4	17 gradations
5	Total halftone page
6	Grid
7	For image position correction
8	For R&D
9	For R&D
10	MCYBk horizontal stripe (laser FF activation)
11	For R&D
12	For R&D
13	For R&D
14	Full color in 17 gradations
15	Not used
16	Not used
17	For R&D
18	For R&D
19	For R&D
20	For R&D
21	For R&D
22	For R&D

Table 7-301

2. 256-Color Test Print (PGTYPE=02)

Use the 256-color test print to check the hues.

For the 256-color test print, the 16x16 frames from the leading edge of the copy paper represent 256 colors; all frames that follow are repetitions of the first set.

a. Hues of the 256 Colors

The print must show the hues shown in Figure 7-303.

If the hues are different, suspect deterioration of the developer, deterioration of the photosensitive drum, and mixing of developers.

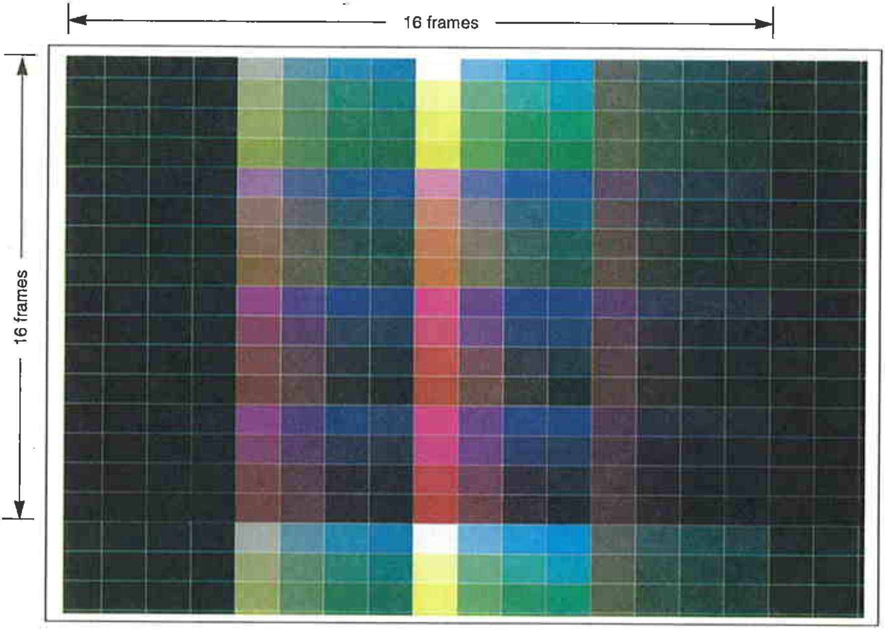


Figure 7-303

3. 256-Gradation Test Print (PGTYPE=03)

Use the 256-gradation test print to check gradation and balance between colors.

- To select a color, use service mode: TEST>DENS - Y/M/C/K.

a. Gradation

You may check the gradation of all densities from density 0 to density 255.

b. Balance between Colors (3-color copying)

Select 3-color mode, and generate a test print to check the gray balance of all densities from density 0 to density 255.

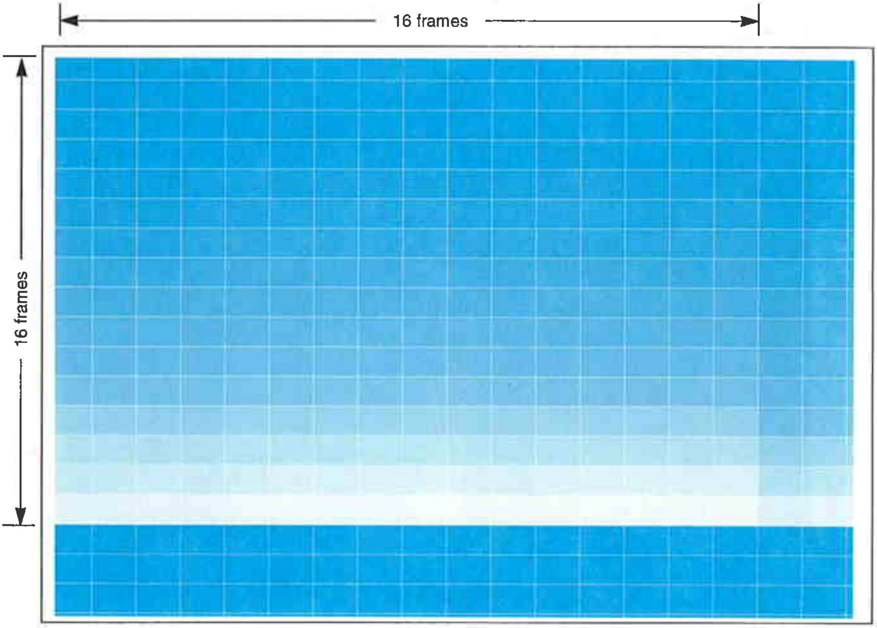


Figure 7-304

4. 17-Gradation Test Print (PGTYPE=04)

Use the 17-gradation test print to check gradation, fogging, white lines, uneven density between left and right, and balance between colors.

To select a color, use service mode: TEST>DENS - Y/M/C/K.

a. Gradation

If the gradation of density is not as shown in Figure 7-305, suspect a fault in the developing assembly or the laser system.

b. Fogging

If fogging is over the section of 00 activation in Figure 7-305, suspect a fault in the developing system or the photosensitive drum; or, the laser may not be adjusted correctly.

c. White Lines

If white lines are noted on the image, suspect a fault in the developing assembly.

d. Balance between Colors (3-color copying)

Select 3-color mode to generate a test print to check the gray balance at each density.

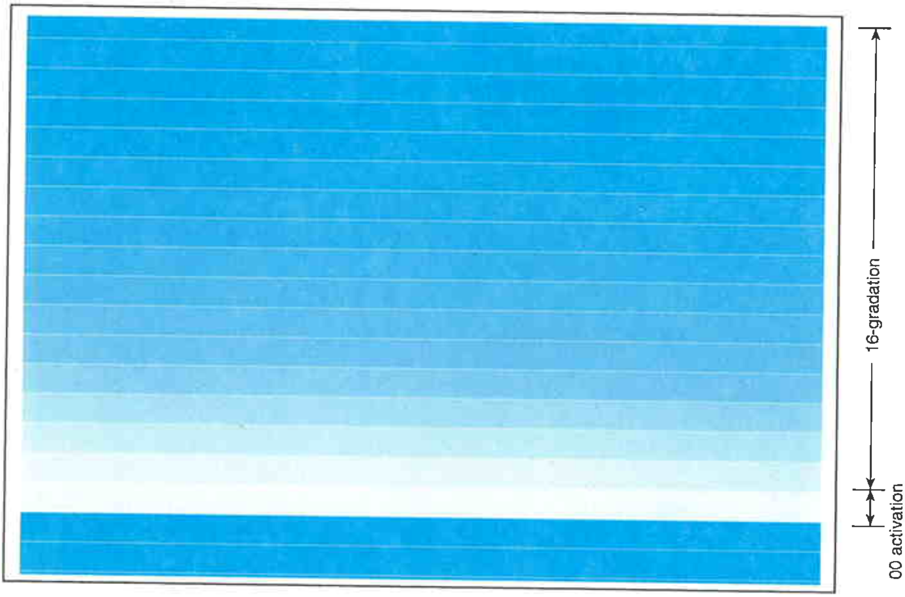


Figure 7-305

5. Halftone Test Print (PGTYPE=05)

Use the halftone test print to check transfer faults (failure), black lines, white lines, and uneven intervals.

To select a color, use service mode: TEST>DENS - Y/M/C/K.

a. Transfer Faults (failure)

If a transfer fault is noted, suspect a fault in the transfer belt or the static eliminating assembly.

b. Black Lines

If black lines are noted, suspect scratches on the photosensitive drum or dirt on the primary charging wire.

c. White Lines

If white lines are noted at the same location for all colors, suspect a fault on the transfer belt.

If they occur at different locations, or if they occur in one color only, suspect a fault in the developing assembly.

d. Uneven Intervals

If uneven intervals occur, suspect the following:

- If at intervals of about 0.5 mm, suspect the scanner*.
- If at intervals of about 38 mm, suspect the developing cylinder.
- If at intervals of about 1.6 mm, suspect the drive gear.

*Will not occur on test prints.

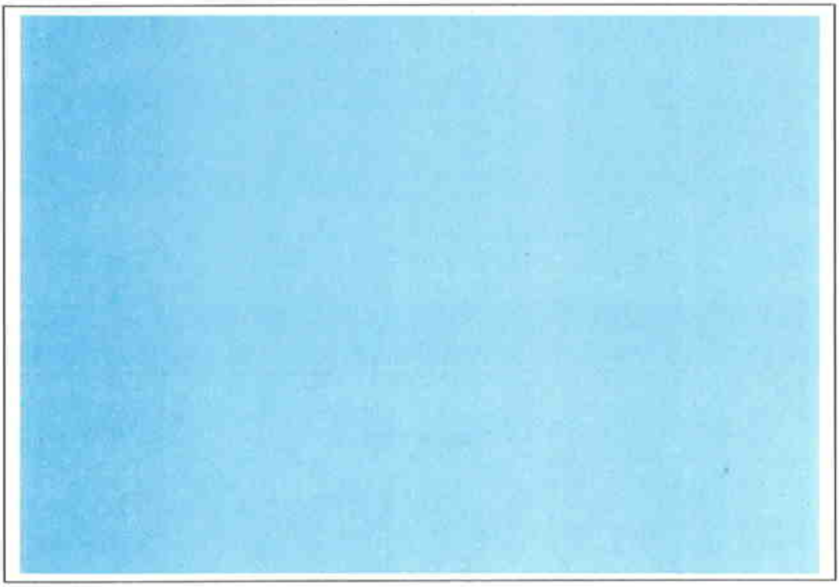


Figure 7-306

6. Grid Test Print (PGTYPE=06)

Use the grid test print to check color displacement, right angles, and straight lines.

To select a color, use service mode: TEST>DENS - Y/M/C/K.

a. Color Displacement

If color displacement is noted, suspect a fault in the transfer belt.

Color displacement on this test print does not necessarily mean color displacement on regular copies because of black text processing. The mechanisms are normal as long as color displacement is not noted on regular copies. (Use this test to find out the location of displacement and the color if color displacement is noted on regular copies.)

b. Right Angles/Straight Lines

If a fault is noted in relation to right angles or straight lines, suspect a displaced laser beam or a fault in the beam detection mechanism.

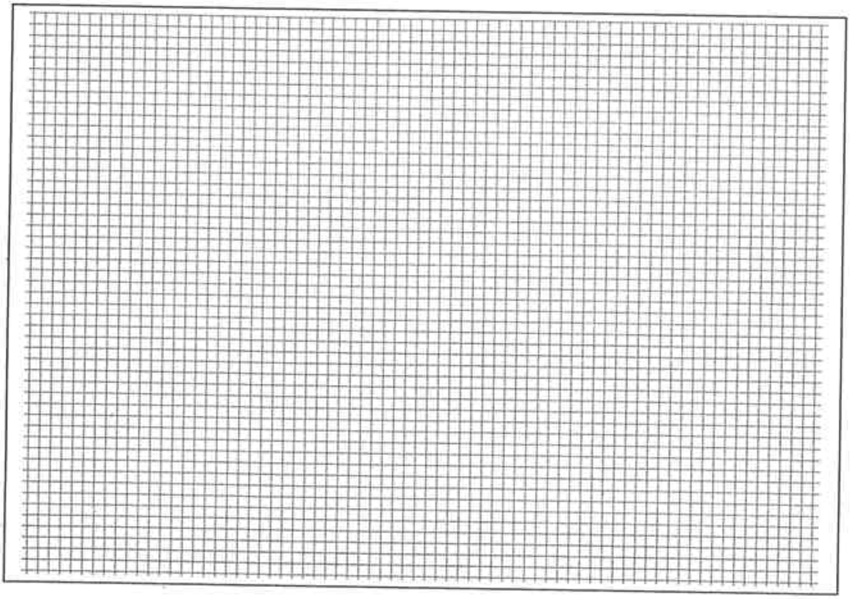


Figure 7-307

7. Image Position Correction Pattern (PGTYPE=07)

Use this test print to check whether the image position correction pattern is normal or otherwise.

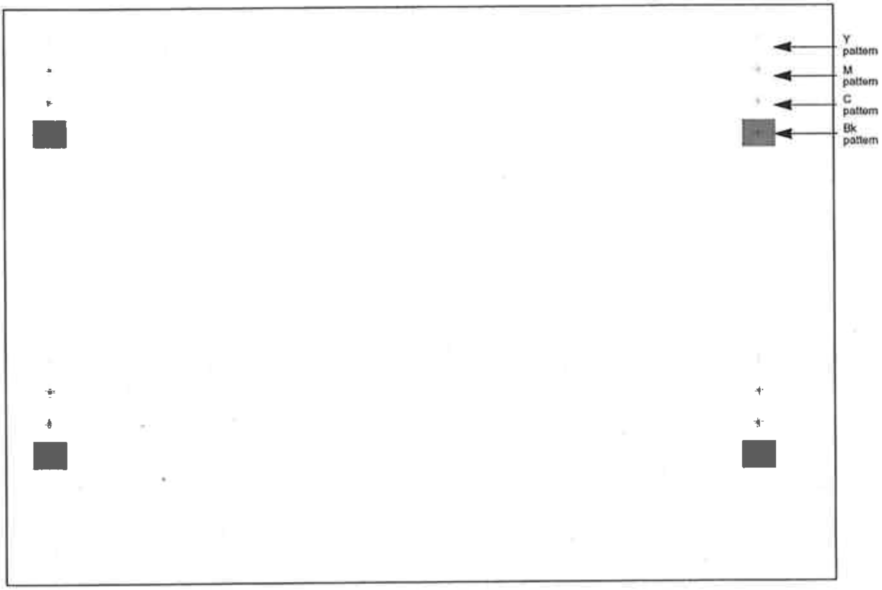

Y pattern
M pattern
C pattern
Bk pattern

Figure 7-308

8. Horizontal Stripe (FF activation) Test Print (PGTYPE=10)

Use the horizontal stripe test print to check the dark area density of each color, balance between colors, and white lines (development).

a. Dark Area Density of Each Color and Balance between Colors

The density must not be appreciably light.

If a mono color copy is light, suspect a fault in the developer or the transfer blade.

If the density is light for all colors, suspect a fault in the up/down movement of the transfer belt.

b. White Lines (development)

For instance, if white lines are noted in the cyan area of the copied image, suspect a fault in the developing assembly for cyan.

c. Uneven Density between Left and Right

If uneven density occurs between left and right for all colors, suspect dirt on the butting block, and a fault in the height of the primary charging wire.

d. Image Position (left/right)

If the position of the cassette holder or the setting of 'REG-X, Y' is wrong, the registration between the paper and the image (left/right) will have a discrepancy, eliminating the non-image width, possibly causing stray toner and soiling the inside of the machine.

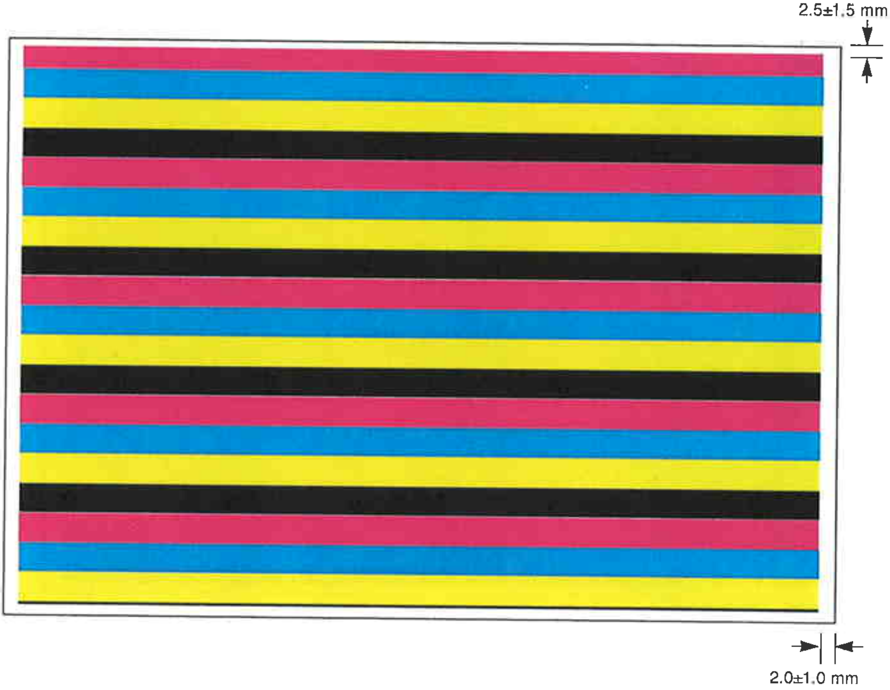


Figure 7-309

9. Full Color 17-Gradation (YMCBk+RGB+gray) Test Print (PGTYPE=14)

Use the full-color 17-gradation test print to check gray balance, gradation of YMCBk, and gradation of RGB mono, and fogging.

a. Gray Balance

Check to make sure that each color is reproduced at an even density over the gray scale.

To make adjustments, use the contrast potential.

b. Gradation

Check gradation of YMCBk and RGB mono and difference in density.

c. Fogging

If fogging is noted in the white area, suspect a fault in the developing assembly or the photosensitive drum; or, the laser may not be adjusted correctly.

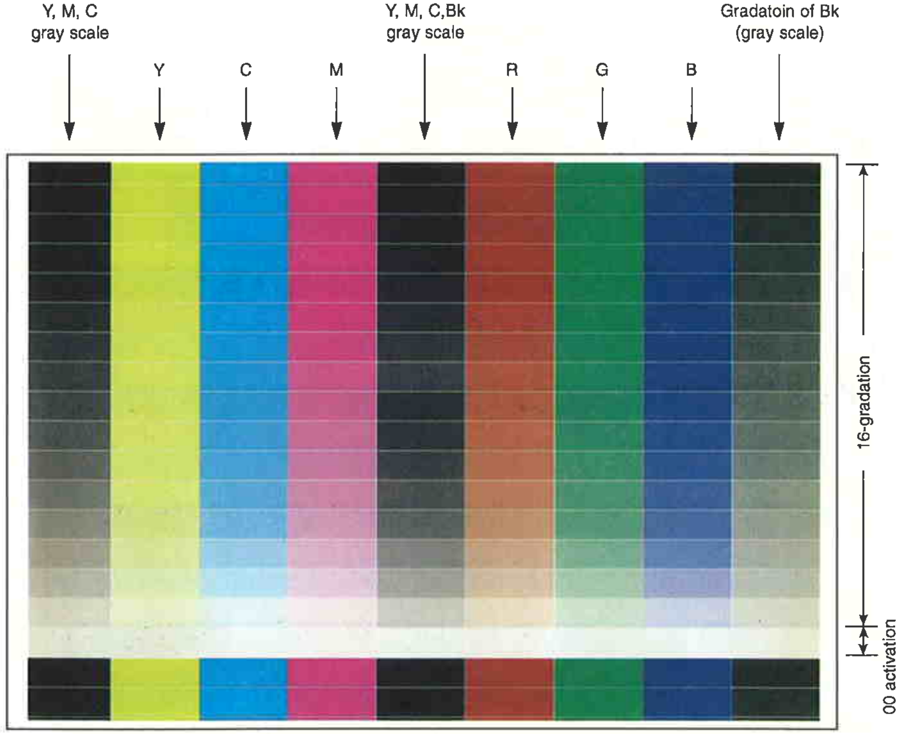

Y, M, C
gray scale
Y
C
M
Y, M, C,Bk
gray scale
R
G
B
Gradatoin of Bk
(gray scale)
16-gradation
00 activation

Figure 7-310

D. Troubleshooting Image Faults

1	Too light (all colors)	7	White lines/white lines (vertical)	13	Soiled image/soiled back
2	Too light (specific color)	8	Horizontal lines/horizontal fogging	14	Fixing fault
3	Uneven density (vertical)	9	White spots (horizontal)	15	Toner smear (fixing)
4	Uneven density (horizontal)	10	White spots	16	Blank
5	Fogging	11	White spots (trailing center)	17	Solid black
6	Vertical lines/ horizontal lines	12	White spots (wavy lines)	18	Color displacement

1 The image is too light (all colors).

2 The image is too light (specific color).

Perform the Image Adjustment Basic Procedure.

3 The copy has uneven density (vertical).

Cause	Step	Checks	Yes/No	Action
	1	Clean the primary charging assembly, dust-proofing glass, reflecting mirror, and lens. Is the problem corrected?	YES	End.
	2	Is the output image of the halftone test print (PGTYPE=5) normal?	NO	Go to step 9.
Moire	3	Is the image uneven because of moire*? * Pattern interference that can occur when copying originals printed in dots.	YES	Decrease 'Photo Sharpness', and store the setting in standard mode. • If excessively decreased, copies of photos will have little contrast.
Scanner	4	Clean the standard white plate, scanning lamp, and reflecting lamp cover. Is the problem corrected?	YES	End.
	5	Is there a gap under the standard white plate or the copyboard glass?	YES	Install them so that the part will be in even contact.
	6	Is the scanning lamp blackened?	YES	Replace it.

Cont'd

Cause	Step	Checks	Yes/No	Action
Service mode	7	Are the settings of 'CCD' in service mode as indicated on the service label?	NO	Enter the correct settings.
	8	Execute 'AUTO-ADJ' of 'CCD' under 'FUNC'. Is the problem corrected?	NO	Try replacing the image processor and the analog processor.
Developing assembly	9	Is uneven density noted in all colors?	NO	Check the developing assembly and the developing cylinder for which uneven density is noted; if a fault is found, clean or replace it.
Grid wire (primary charging assembly)	10	Is the grid plate of the primary charging wire normal?	NO	Replace the grid plate.
Pre-exposure lamp	11	Does the pre-exposure lamp turn ON during copying operation?	NO	Check the contact of J2239 on the DC controller PCB and the wiring from J2239 to J6021 on the pre-exposure lamp PCB; if normal, replace the pre-exposure lamp PCB.
Transfer/static eliminating system	12	• Is the transfer blade locking mechanism of the transfer unit normal? • Are there scratches or a fault on the transfer blade? • Operate the transfer blade using 'BLADE' under 'FUNC' in service mode to check the locking of the transfer blade. At this time, is the transfer blade subject to warping or other fault?	YES	Check the transfer blade locking mechanism; if normal, replace the transfer blade.
Fixing unit	13	Are there scratches or dents in the peripheral direction of the fixing roller (upper, lower)?	YES	Replace the fixing roller.
	14	Is there a fault in the fixing oil applying roller, oil hose, oil tank, fixing oil pump drive solenoid (SL2), or oil removing blade?	YES	Remove the cause of the fault, and replace the part.

4 The copy has uneven density (horizontal).

Cause	Step	Checks	Yes/No	Action
	1	Clean the primary charging assembly, dust-proofing glass, reflecting mirror, and lens. Is the problem corrected?	YES	End.
	2	Is the output image of the halftone print (PGYTPE=5) normal?	NO	Go to step 6.
Moire	3	Is the image uneven because of moire*? * Pattern interference that occurs when copying originals printed in dots.	YES	Decrease 'Photo Sharpness', and store the setting in standard mode. • If excessively decreased, copies of photos will have little contrast.
Service mode (CCD)	4	Are the settings of 'CCD' as indicated on the service label?	NO	Enter the correct settings.
	5	Execute 'AUTO-ADJ' of 'CCD' under 'FUNC' in service mode. Is the problem corrected?	NO	Replace the image processor or the analog processor.
Transfer/static eliminating system	6	• Is the transfer blade locking mechanism of the transfer unit normal? • Are there scratches or a fault on the transfer blade? • Operate the transfer blade using 'BLADE' under 'FUNC' in service mode to check the locking of the transfer blade. At this time, is the transfer blade subject to warping or other fault?	YES	Check the transfer blade locking mechanism; if normal, replace the transfer blade.
Fixing unit	7	Are there scratches or dents in the peripheral direction of the fixing roller (upper, lower)?	YES	Replace the fixing roller.
	8	Is there a fault on the fixing oil applying roller, oil hose, oil tank, oil supply solenoid or oil removing blade?	YES	Remove the cause of the fault, and replace the part.

5 The copy has fogging.

Perform the Image Adjustment Basic Procedure.

6 The copy has vertical streaks/ vertical lines.

Cause	Step	Checks	Yes/No	Action
	1	Generate a halftone test print (PGTYPE=5). Are vertical streaks/ vertical lines noted? If the problem is noted in all colors, go to step 13. If the problem is noted in a specific color, go to the next step.	NO	Go to step 16.
Primary charging assembly cleaner	2	Does the cleaner of the primary charging assembly stop in the middle?	NO	Check the motor of the cleaner.
Primary charging wire, Pre-primary charging wire	3	Clean the primary charging wire and the pre-primary charging wire. Is the problem corrected?	YES	End.
Grid plate	4	Are there scratches or dirt on the grid plate?	YES	Replace the grid plate.
Photosensitive drum	5	Are there scratches in the peripheral direction of the photosensitive drum?	YES	Replace the photosensitive drum. If scratches are found, remove the cause. Further, keep in mind that scratches on the photosensitive drum can damage the cleaning blade; if such is the case, replace the cleaning blade also.

Cause	Step	Checks	Yes/No	Action
Photosensitive drum cleaner (poor cleaning)	6	Is there paper or foreign matter on the cleaning blade of the photosensitive drum cleaner assembly?	YES	Remove the foreign matter, and clean the cleaning blade and the outside of the cleaner assembly.
	7	Is there deformation or damage on the edge of the cleaning blade? Feel the edge of the cleaning blade with a finger to check.	YES	If deformation or damage is found, remove the cause, and replace the cleaning blade. See the description given for the photosensitive drum and the cleaning blade.
	8	Are the vertical streaks rather wide and fuzzy? Does the waste toner screw rotate? Is there a collection of waste toner in the cleaning assembly?	YES	Apply grease on the cleaner drive shaft of the photosensitive drum cleaner assembly, and remove the waste toner.
Transfer blade	9	Does the transfer blade have warping, bending, or a fault?	YES	Replace the transfer blade; if it is soiled with toner, clean it.
Developing assembly	10	Check the developing assembly and the developing cylinder for which the problem is noted. Is there a fault?	YES	Clean or replace it.
SALT sensor scoop-up sheet	11	Does the SALT sensor scoop-up sheet have deformation or a fault?	YES	Replace it.

Cause	Step	Checks	Yes/No	Action
Pre-exposure lamp, Optical path (dirt)	12	Does the pre-exposure lamp have a fault?	YES	Remove the cause, and replace the part.
			NO	Clean the bending mirror and the folding mirror.
Fixing assembly	13	Are there scratches in the peripheral direction of the upper fixing roller?	YES	• Replace the upper fixing roller. • Check if the web is taken up properly. • Check the fixing separation claw and the separation guide.
	14	Are there scratches or dents in the axial direction of the fixing roller (upper, lower)?	YES	Check the fixing assembly inlet for dirt. If the problem is on the trailing edge only, try replacing the fixing roller. Replace the fixing roller.
Fixing assembly	15	Is there a fault on the oil applying roller, oil hose, oil tank, oil supply solenoid, or oil removing blade?	YES	Remove the cause of the fault, and replace the part.
Optical path	16	Clean the standard white plate, scanning lamp, and reflecting lamp cover mirror. Is the problem corrected?	YES	End.
	17	Remove the CCD cover, and clean the surface of the CCD with a blower brush. Is the problem corrected?	YES	End.
			NO	Replace the CCD unit.

Work on the Photosensitive Drum and Cleaning Blade

- Clean the photosensitive drum with a flannel cloth coated with toner. You need not replace the photosensitive drum if it is free of toner cake and its surface is free of scratches.
- Clean the cleaning blade with lint-free paper. You need not replace it if its edge is free of scratches. Thereafter, put lubricant on lint-free paper, and coat the edge of the cleaning blade evenly with lubricant.

Points to Note

If the lubricant is not even, the copies may carry white, vertical lines.

- Limit the application to the edge of the blade, i.e., where it will come into contact with the drum.
- Do not rub the edge with force. Tap lightly over the edge to avoid damage.
- For the edge, apply it in three strokes in the direction of the arrow. (same direction)

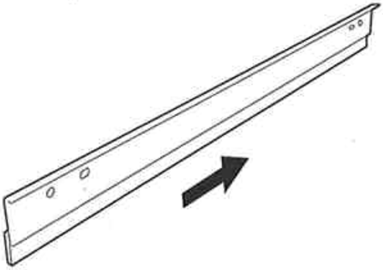


Figure 7-311

7 The copy has white streaks/ white lines (vertical).

Cause	Step	Checks	Yes/No	Action
	1	Generate a halftone test print (PGTYPE=5). Are there vertical white streaks/white lines? If in all colors, go to step 8. If in a specific color, go to the next step.	NO	Go to step 15.
Developing assembly	2	Check the cylinder of the developing assembly for which white streaks/ white lines are noted. Are there white streaks or other fault?	YES	Check the inside of the developing assembly for foreign matter.
Laser optical path	3	Clean the dust-proofing glass of the laser exposure system. Is the problem corrected?	YES	End.
	4	Clean the lens with a blower brush. Is the problem corrected?	YES	End.
Photosensitive drum	5	Are there scratches in the peripheral direction of the photosensitive drum?	YES	Clean the photosensitive drum with a cloth coated with toner; if the scratches are not eliminated, replace the photosensitive drum.
Cleaner lubricant	6	Does the problem occur during installation of the machine or replacement of the photosensitive drum?	YES	Suspect uneven cleaner lubricant. See the notes on using the cleaner lubricant.

Cause	Step	Checks	Yes/No	Action
Transfer unit	7	Are there scratches or fault on the transfer belt?	YES	Replace the transfer blade.
	8	Are there scratches or fault on the transfer blade?	YES	Replace the transfer belt. If soiled with toner, clean it.
Fixing unit	9	Clean the fixing assembly inlet guide (upper, lower). Is the problem corrected?	YES	End.
	10	Are there scratches or dents in the axial direction of the fixing roller (upper, lower)?	YES	Remove the cause of the scratches, and replace the fixing roller.
	11	Is there a fault in the take-up mechanism of the web and cleaning operation?	YES	Remove the cause of the fault, and replace the part.
	12	Check the fixing assembly separation claw or the separation guide for an error.	YES	Clean or replace it.
	13	Are there scratches or dents on the oil removing blade?	YES	Clean or replace it.
Separation assembly	14	Clean the separation assembly. Is the problem corrected?	YES	End.
Optical path	15	Clean the standard white plate, scanning lamp, reflecting lamp cover, mirror, reflecting mirror, and lens. Is the problem corrected?	YES	End.
CCD, Standard white plate (dirt, scratches)			NO	Try the following: • Change the setting of 'ADJUST-S' under 'ADJUST' in service mode to change the shading position. • Replace the standard white plate. • Replace the CCD unit.

Notes on Using the Cleaner Lubricant

You must shake the container well before removing its cap. When applying to the cleaning blade, be sure the application is uniform; uneven application will allow the lubricating ingredients to slide over the cleaning blade and adhere to the photosensitive drum, causing vertical white lines on the copies.

If such a problem is noted,

1) Using the color for which vertical white streaks are noted, make 10 solid copies in continuous mode.
    - This step may correct the problem.
2) Remove the photosensitive drum, and using a cloth coated with the color in question, wipe the surface of the drum; then, install the photosensitive drum.
    - Remove the lubricant adhering to the photosensitive drum as indicated.

8 The copy has horizontal streaks/horizontal fogging.

Cause	Step	Checks	Yes/No	Action
	1	Generate a halftone test print (PGTYPE=5). Are there vertical white streaks/white lines? If in all colors, go to step 6. If in a specific color, go to the next step.	NO	Go to step 8.
Photosensitive drum	2	Are there scratches or dirt in the axial direction of the surface of the photosensitive drum?	YES	Replace the photosensitive drum.
	3	Is there a horizontal line at drum intervals?	YES	Generate 20 test prints (PG-TYPE=05) continuously. Repeat this about five times while checking the image. If the problem is not corrected, replace the drum.
Paper (curl)	4	Is there a trace of black along the trailing edge as if something has rubbed against the area?	YES	Remove the curl
Developing bias	5	Is the problem random horizontal line of a specific color?	YES	Check the wiring related to the developing bias; if normal, replace the developing bias unit (HVT-3).
Curl-removing roller	6	Is the problem at intervals of about 30 mm and of all colors?	YES	Clean the curl-removing roller.
Paper lint removing film	7	Is the problem a black line 188 mm from the leading edge of the image?	YES	Replace the paper lint removing film of the registration roller assembly.
Power supply voltage, Scanning lamp, Lamp regulator	8	Does the scanning lamp flicker?	YES	1. Check the voltage of the power supply for fluctuations. Use an exclusive power outlet. 2. Check the scanning lamp and the lamp regulator.
Original exposure system, CCD			NO	Check the No. 1/No. 2 mirror mount for wobbling. Check the contact between the CCD and the CCD driver.

Horizontal Streaks

No.	Color/location (A3)	Interval (mm)	Cause	Action
1	Specific color (dark, horizontal lines).	Drum	A transfer memory exists on the drum.	Generate 20 test prints (PG=05, halftone) continuously. (Try five times or so while checking the images.) If the problem is not corrected, replace the drum.
2	Specific color (light, horizontal lines).		Traces of contact with the developing cylinder exist on the drum.	
3	Specific color; leading edge (black lines as if made by rubbing).		The trailing edge of curled paper touched the separation charging assembly.	Remove the curling from the paper.
4	Specific color	Random	The output of the developing bias is faulty.	Check the wiring; if normal, replace the developing bias unit (HVT3-A/B).
5	All colors	30 mm (approx.)	Dirt exists on the de-curling roller (upper).	Clean the roller.

9 The copy has white spots (horizontal).

Cause	Step	Checks	Yes/No	Action
Rail on mirror mount, Cable of original exposure system	1	Generate a halftone test print (PG-TYPE=5). Is the problem noted? If all colors, go to step 5. If a specific color, go to the next step.	NO	• Clean the rail of the mirror mount. • Check the cable of the scanning system.
Developing assembly	2	Check the developing cylinder. Is it normal?	NO	Replace the developing assembly.
Transfer unit	3	Is the locking mechanism for the transfer blade normal?	NO	Remove the cause.
	4	Does the transfer blade have warping, bending, or a fault?	YES	Replace the transfer blade.
	5	Does the transfer belt have scratches, bending, or a fault?	YES	Replace the transfer belt.
Fixing roller	6	Is offset toner noted on the surface of the fixing roller?	YES	Check the fixing roller (upper, lower) for deformation.
Paper			NO	Is the paper moist? Try different paper; advise the user on the correct method of storing paper.

10 The copy has white spots.

Cause	Step	Checks	Yes/No	Action
	1	Is there a small lump of toner in the middle of a spot?	YES	Go to step 5.
Developing assembly	2	Generate a halftone test print (PGTYPE=5). Is the problem noted? If all colors, go to step 4. If a specific color, go to the next step.	NO	Check the developing assembly and the developing cylinder for which the problem is noted; if a fault is found, clean or replace it.
Photosensitive drum, Transfer belt	3	• Check the photosensitive drum and the transfer belt for scratches. • Check the transfer belt for scratches and deformation.	YES	Replace the photosensitive drum or the transfer drum belt.
Fixing roller	4	Is the problem noted at intervals of about 180 mm?	YES	Check the fixing roller for scratches and deformation.
Waste toner (caking)	5	Check to find out whether the lump of toner is of waste toner or developer. • Waste toner: gray (mixed colors) • Developer: Y, M, C, or Bk	YES	Check the end seal of the photosensitive drum cleaner blade. Check the end of the cylinder of the developing assembly for dirt.
Developer (caking)			NO	• Replace the developer. • Replace the developing assembly.

11 The copy has white spots (trailing center).

A trailing center white spot is a type of transfer failure and is found at the center of the trailing edge of a paper.

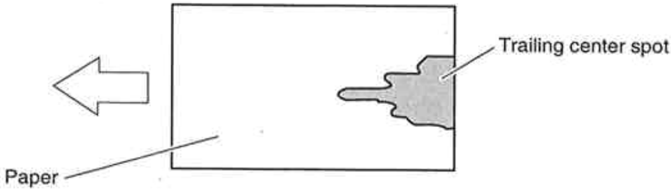


Figure 7-312

■ Trailing Center White Spot

A trailing center white spot is caused by warping of paper. The leading edge of such paper is retained on the transfer belt without uniform contact, causing its trailing edge to warp.

This problem tends to occur particularly when copying on the second side of a two-sided copy in a high humidity environment.

Cause	Step	Checks	Yes/No	Action
	1	Does the problem occur only when copying on special paper or thick paper?	YES	Go to step 3.
	2	Is the paper wavy because of humidity?	NO	Replace the paper.
Cassette heater	3	Is the cassette heater operating normally?	NO	See "The cassette heater fails to operate."
Transfer belt			YES	Check the transfer belt; replace it if dents exist in the surface.

12 The copy has white spots (meandering).

Cause	Step	Checks	Yes/No	Action
Separation charging wire	1	Clean the separation charging wire. Is the problem corrected?	YES	End.
Separation charging assembly	2	Is leakage, poor contact, or wrong charging wire height noted for the separation charging assembly?	YES	Remove the fault.
Environment sensor	3	Check the machine inside temperature using 'ANALOG' under 'DISP' in service mode. Is the reading proper?	YES	Replace the environment sensor.
			NO	Check the separation charging wire, signal line of the pre-fixing charging system, and wiring.

13 The copy has a soiled image or soiled back.

Cause	Step	Checks	Yes/No	Action
	1	Is a soiled image noted only on a copy made after making a two-sided copy?	YES	Go to step 10.
Image margin	2	Is the image margin within specification?	NO	Make adjustments as instructed under 2. "Standards and Adjustments."
Primary charging assembly, Developing bias laser power	3	Is fogging noted in the image margin?	YES	Check the primary charging assembly for dirt, and check the developing bias and laser power.
Cleaning fault	4	Is the cleaning blade of the photosensitive drum locked?	NO	Lock and fix in position the cleaning blade of the cleaning assembly.
	5	Is foreign matter found on the cleaning blade of the photosensitive drum cleaning assembly?	YES	Remove the foreign matter, and clean the cleaning blade and the cleaner assembly externals.
	6	Is deformation or scratches noted on the edge of the cleaning blade? Feel the cleaning blade with a finger to check for deformation and scratches.	YES	If deformation or scratches are noted, remove the cause, and replace the cleaning blade.
	7	Is there a collection of waste toner under the scoop-up sheet?	YES	Clean it.
	8	Is the scoop-up sheet of the photosensitive drum cleaning blade bent or faulty?	YES	Replace the scoop-up sheet.

Cause	Step	Checks	Yes/No	Action
Side scraper	9	Are the edges soiled when on the photosensitive drum?	YES	Replace the side scraper.
Cleaning assembly (developing assembly)	10	Is the transfer belt soiled with toner or fixing oil?	YES	1. Check to see if toner is leaking from the photosensitive drum cleaning assembly or the No. 2 cleaning assembly (end). 2. Check the oil removing roller to see if it is operating correctly.
Fixing assembly	11	Is the take-up mechanism of the web of the fixing assembly normal? Is the upper/lower roller cleaned normally?	NO	1. Check the take-up mechanism of the web. 2. Clean the upper/lower roller. 3. Clean the oil blade. 4. Clean the contact face of the oil applying roller. 5. Clean the fixing assembly guide. 6. Clean the oil removing blade.
Delivery assembly, External static eliminating/ separation charging assembly	12	Clean the delivery roller, separation claw, external static eliminating/ separation charging assembly. Is the problem corrected?	YES	End.

14 The copy has poor fixing.

Cause	Step	Checks	Yes/No	Action
Upper roller, Lower roller	1	Is the problem in the same direction as the feeding direction of the copy?	YES	1. Check the upper/lower roller of the fixing assembly for scratches. 2. Check the separation claw to see if it is positioned correctly.
Heater	2	Does the heater (H1, H2) turn ON at power-on?	NO	See "The fixing heater fails to operate."
Oil application	3	Is oil applied evenly over the upper roller of the fixing assembly?	NO	• Check the oil application assembly. • Check the oil supply from the oil case.
Insulating bush, Bearing	4	Are the insulating bush and the bearing installed properly?	NO	Re-install them.
Nip, Thermistor	5	Is the nip between the upper roller and the lower roller of the fixing assembly within specification?	NO	Adjust the nip.
			YES	Check the thermistor for a fault.

15 The copy has bleeding toner (during fixing).

The term bleeding toner refers to spreading of toner immediately following (in relation to feeding direction) a high-density area of a copy.

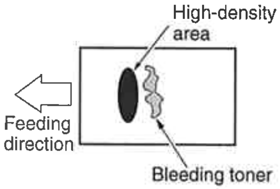


Figure 7-313

Cause	Step	Checks	Yes/No	Action
Separation charging wire, Pre-fixing charging wire	1	Clean the separation charging wire and the pre-fixing charging wire. Is the problem corrected?	YES	End.
Separation charging assembly, Pre-fixing charging assembly	2	Is leakage, poor contact, or wrong charging wire height noted for the separation charging assembly or the pre-charging assembly?	YES	Remove the fault.
Service mode (ADJUST > HV-SP)	3	Decrease the setting of 'SP-xx' corresponding to the mode and paper type using 'HV-SP' under 'ADJUST' in service mode. Is the problem corrected? For a description of SP-xx and adjustments, see the descriptions given for service mode.	YES	End.
Service mode (ADJUST > HV-OFST)	4	Increase the setting of 'SP-OFST' for 'HV-OFT' under 'ADJUST' in service mode. Is the problem corrected?	YES	End. For the range of settings, see the descriptions on service mode.
Toner (excessive)	5	Check the latent image formation system and the developing system. Is there a fault?	YES	Correct it.
			NO	Lower the copy density by changing the F value.

16 The copy is blank.

Cause	Step	Checks	Yes/No	Action
	1	Generate a horizontal test print (PG-TYPE=10). Is the image normal?	YES	Check the wiring of the following PCBs; if normal, replace it. • Analog processor PCB • Video controller PCB • Image processor PCB • CCD unit
Potential control fault	2	Execute 'EPC' under 'FUNC' in service mode. Is the copy image generated immediately after the execution normal?	YES	End.
Transfer unit	3	Is a fault noted on the transfer blade?	YES	Replace it.
Developing motor	4	Is the developing cylinder rotating during development?	NO	Check the developing motor.
Transfer high voltage	5	Turn off the power switch during development. Lower the transfer unit, and release the transfer unit and the photosensitive drum by hand; then, lift the hopper to remove the photosensitive drum unit. Is the image on the drum normal?	YES	• Check the transfer high-voltage system. • Check the high-voltage cable from the HVT PCB to the transfer unit; if normal, replace the HVT PCB. • Check the internal static eliminating high-voltage system.
			NO	• Check the developing bias system.

17 The copy is solid black.

Cause	Step	Checks	Yes/No	Action
	1	Generate a horizontal stripe test print (PGTYPE=10). Is the image normal?	YES	Go to step 6.
Potential control fault	2	Execute 'EPC' under 'FUNC' in service mode. Is the copy image immediately after the execution normal?	YES	End.
Primary charging unit	3	Is the primary charging unit installed properly?	NO	Replace the high-voltage cord.
Primary charging, Grid bias (output system)	4	Is there electrical continuity between both connectors of the high-voltage cord connected to the primary charging assembly?	NO	Replace the high-voltage cord.
			YES	• Check the primary charging system and the grid bias output system. • Try replacing the HVT PCB.
	5	Does the scanning lamp turn ON?	NO	See "The scanning lamp fails to turn ON."
Anti-counterfeit function	6	Does the problem occur when a bank note is copied?	YES	The anti-counterfeit function is at work. Advise the user that copying a bank note is illegal.
Original exposure system anti-counterfeit function	7	Does the problem occur when copying an original similar to a bank note?	YES	Check the original exposure system. If the problem is not corrected, advise the user that the anti-counterfeit is at work.
Connector, Wiring	8	Are the connectors and wiring between the following PCBs normal? Image processor PCB Analog processor PCB CCD unit	NO	Re-connect them.

Cause	Step	Checks	Yes/No	Action
DC power supply	9	Is DC power present between the following terminals of the analog processor? J2504-7 (+) — 8 (–): 5V J2504-5 (+) — 4 (–): –8V J2504-3 (+) — 4 (–): +8V J2504-1 (+) — 2 (–): +15V	NO	See "The DC power is absent."
CCD unit, Analog processor PCB, Image processor PCB			YES	Try replacing the following parts: • CCD unit • Analog processor PCB • Image processor PCB

■ Checking the Original Exposure System

1) Check to find out if the copyboard glass has ridden over an obstacle.
2) Clean the scanning lamp, reflecting plate, No. 1/2/3 mirror, standard white plate, and copyboard glass, and execute 'AUTO-ADJ' for 'CCD' under 'FUNC' in service mode. Is the problem corrected?

18 The copy has color displacement.

Cause	Step	Checks	Yes/No	Action
	1	Set 'AUTO-ADJ' of 'IMG-REG' under 'FUNC' in service mode to 'ON'. Is the problem corrected?	YES	End.
Transfer sheet	2	Does the transfer sheet have dents or deformation?	YES	Replace it.
Retention	3	Does the Y transfer blade have dents or deformation?	YES	Replace it.
	4	Is the operation of the locking mechanism of the Y transfer blade normal?	NO	Remove the cause of the fault.
Drum drive system	5	Is the gear of the photosensitive drum worn or loose?	YES	Replace the gear.
	6	Does the flywheel wobble?	YES	Tighten the mounting screw.
	7	Clean the ends of the photosensitive drum and the spacer rubber. Is the problem corrected?	YES	End.
			NO	Check the developing drive system for wobbling and other faults.

IV. TROUBLESHOOTING

A. Troubleshooting Malfunctions

1 E000/E004

- Check the detail code of 'E000/E004' using 'JAM/ERR' under 'DISPLAY' in service mode.

a. E000=XX01, XX02 (high-order 2 digits representing type as XX=01 indicating upper heater and 02, lower heater) and E004=0001

<table>
<tr><th>Cause</th><th>Step</th><th>Checks</th><th>Yes/No</th><th>Action</th></tr>
<tr><td></td><td>1</td><td>Clear 'E000'. (Note 1) Is 'E000' indicated immediately after the power switch is turned ON?
• Be sure to turn OFF the power switch immediately after the check.</td><td>NO</td><td>Go to step 3.</td></tr>
<tr><td>Fixing thermistor (open circuit)</td><td rowspan="2">2</td><td rowspan="2">Turn OFF the power switch, and disconnect J6020 from the connector J2209 on the DC controller PCB. As indicated by the detail code, measure the resistance between a and b in the following table. Is it 1kΩ or less?
<table>
<tr><th>Code</th><th>a</th><th>b</th></tr>
<tr><td>0101/0202</td><td>J6020A-9</td><td>J6020A-10</td></tr>
<tr><td>0101/0202</td><td>J6020A-11</td><td>J6020A-12</td></tr>
</table></td><td>YES</td><td>Check the wiring from J2209 to the fixing thermistor; if normal, replace the fixing thermistor.</td></tr>
<tr><td>DC controller PCB</td><td>NO</td><td>Replace the DC controller PCB.</td></tr>
<tr><td>Triac (open circuit)</td><td>3</td><td>Replace the triac. Is the problem corrected?</td><td>YES</td><td>End.</td></tr>
<tr><td>AC driver PCB</td><td rowspan="2">4</td><td rowspan="2">Replace the AC driver PCB. Is the problem corrected?</td><td>YES</td><td>End.</td></tr>
<tr><td>DC controller PCB</td><td>NO</td><td>Replace the DC controller PCB.</td></tr>
</table>

Note 1:

To clear 'E000',

1) Start service mode. (✱ → 2 8 → ✱)
2) Press 'FUNC', 'FUSER', and 'E000-RLS' in order.
3) Check to make sure that the indication for 'P' at the top of the Service Mode screen changes from 'ERROR → SERVICE → ERROR'.
4) Turn OFF and ON the power switch.

b. E000=XX20, XX30, XX40, XX50 (high-order 2 digits representing type as XX=01 indicating upper heater and 02, lower heater)

Cause	Step	Checks	Yes/No	Action
	1	Clear 'E000' (*), and turn ON the power switch. Does the fixing heater turn ON? • Check by the eye. Be sure to turn OFF the power switch immediately after the check.	NO	See "The fixing heater fails to turn on."
			YES	Go to step 7.
Fixing thermistor (open circuit)	2	Open the front cover and the delivery assembly to cool the fixing roller. Close the delivery assembly and the front cover; then, set the meter to the 5VDC range, and measure the voltage between J2209A-9 (+: FRST) and J2209A-10 (–; GND). Likewise, measure the voltage between J2209A-11 (+; FRST) and J2209A-12 (–; GND). Does the voltage decrease from about 5 V gradually when the power switch is turned ON? • Turn OFF the power switch immediately after the check.	NO	Check the wiring from J2209A to the fixing thermistor; if normal, replace the fixing thermistor.
Thermistor	3	Is the thermistor (THM1, THM2) in even contact with the upper fixing roller?	NO	Re-install it.
Thermistor (dirt)	4	Clean the area where the thermistor and the fixing roller are in contact. Is the problem corrected?	YES	End.
Environment	5	Does the problem occur only when the machine is turned on for the first time in the morning?	YES	• Advise the user that the operating environment is outside the specification. • Advise the user not to turn on the power while the room is cold.
Thermistor	6	Replace the thermistor. Is the problem corrected?	YES	End.
DC controller			NO	Replace the DC controller.
SSR (short circuit)	7	Replace the SSR. Is the problem corrected?	YES	End.
DC controller PCB			NO	Replace the DC controller PCB.

c. E000=0002

Cause	Step	Checks	Yes/No	Action
Triac (short circuit)	1	Replace the triac. Is the problem corrected?	YES	End.
DC controller PCB.			NO	Replace the DC controller PCB.

2 E005

Cause	Step	Checks	Yes/No	Action
Cleaning web	1	Is the cleaning web more or less used up?	YES	Replace the cleaning web.
Counter	2	After replacing the cleaning web, has 'E005-RLS' of 'FUSER' under 'FUNC' in service mode been executed?	NO	Execute 'E005-RLS' of 'FUSER' under 'FUNC' in service mode.
Detecting lever (position)	3	Is the detecting lever of the web length sensor on the web?	NO	Re-mount it.
Web length sensor (PS36)	4	Is the web length sensor (PS36) normal?	NO	Replace the web length sensor.
DC controller PCB			YES	Replace the DC controller PCB.

You cannot clear 'E005' by executing 'E005-RLS' without replacing the web. Replace the web first.

3 E006

Cause	Step	Checks	Yes/No	Action
Fixing drawer connector	1	Is there a fault in the fixing drawer connector?	YES	Replace the drawer connector.
DC controller PCB			NO	Check the wiring from J2209A on the DC controller PCB to the fixing drawer connector J6019; if normal, replace the DC controller PCB.

4 | E008

Cause	Step	Checks	Yes/No	Action
Fixing oil	1	Does the oil case have an adequate amount of fixing oil?	NO	Supply oil.
Fixing oil supply route	2	Is the hose from the oil case to the upper oil pan clogged with dust?	YES	Remove the clogging; or, replace the part.
Fixing oil level sensor (PS6)	3	Is the fixing oil level sensor (PS6) normal? (Check as when checking a photointerrupter.)	NO	Check the wiring from the DC controller PCB to the sensor; if normal, replace the fixing oil level sensor (PS6).
Oil pump drive solenoid (SL2)	4	Operate the oil pump drive solenoid using 'IO' of 'FMISC' under 'FUNC' in service mode. Does it operate normally?	NO	Check the wiring from the DC controller PCB to the oil pump solenoid; if normal, replace the oil pump solenoid.
DC controller PCB	5	Operate the solenoid using 'IO' of 'FMISC' under 'FUNC' in service mode. At this time, does the voltage between J2209A-3 and J2209A-4 on the DC controller PCB change from 24 V to 0 V?	NO	Replace the DC controller PCB.

5 E012

Cause	Step	Checks	Yes/No	Action
	1	Does the drum motor (M21) rotate during initial rotation?	YES	Go to step 4.
Excess load	2	Slide out the primary charging assembly, and check the condition of the cleaning blade by the naked eye. (Do not slide out the process unit.) Is the cleaning blade bent?	YES	Put a finger through the primary charging assembly slot, and push the blade support plate to correct the bend; then, slide out the process unit. Check if the photosensitive drum should be subject to excess load. Replace the cleaning blade as necessary.
Drum motor (M21)	3	Set the meter to the 5VDC range, and measure the voltage between J2226A-13 (+; M210N) and J2226A-14 (–; GND) on the DC controller PCB. Turn OFF and then ON the power switch. Does the voltage change from about 5 V to about 0 V when the main motor starts to rotate?	YES	Replace the drum motor (M21).
DC controller PCB			NO	Check the wiring from J2226A to the drum motor; if normal, replace the DC controller PCB.
DC controller PCB	4	Set the tester to the 5VDC range, and measure the voltage between J2226A-12 (+; M21PLL*) and J2226A-14 (–; GND) on the DC controller PCB. Turn OFF and then ON the power switch. Does the voltage change from about 3 V to about 0 V when themain motor starts to rotate?	YES	Replace the DC controller PCB.
Drum motor			NO	Check the wiring from J2226A to the drum motor; if normal, replace the drum motor.

6 E013

- Check the detail code of 'E013' using 'JAM/ERR' under 'DISPLAY' in service mode.

Cause	Step	Checks	Yes/No	Action
Waste toner feeding screw	1	Is '0002' indicated?	YES	The waste toner case is full, imposing excess load on the waste toner feeding screw. Remove the waste toner as shown under "F013-0002."
Waste toner feeding motor (M20)	2	Set the meter to the 12VDC range. Does the voltage between J2226A-2 (+) and J2226A-3 (–) on the DC controller PCB change from 5 to 0 V when the Start key is pressed after turning off and then on the power?	YES	Check the wiring; if normal, replace the waste toner feeding motor.
DC controller PCB			NO	Replace the DC controller PCB.
Waste toner lock detecting switch (M4)	3	Is the voltage between J2223B-10 (+) and J2223B-11 (–) on the DC controller PCB 0 V when the waste toner lock detecting switch is pressed and 5 V when released?	NO	Replace the waste toner lock detecting switch.
DC controller PCB			YES	Replace the DC controller PCB.

■ E013-0002

1) Turn off the power switch.
2) Apply vibration to area A of the waste toner box [1] so that the toner moves from the rear to the front.

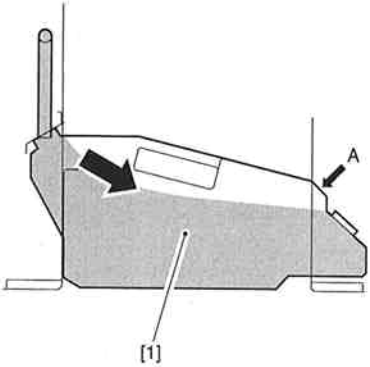


Figure 7-401

3) Tap the waste toner vertical pipe [2] with a screwdriver so that the toner will fall from the pipe.

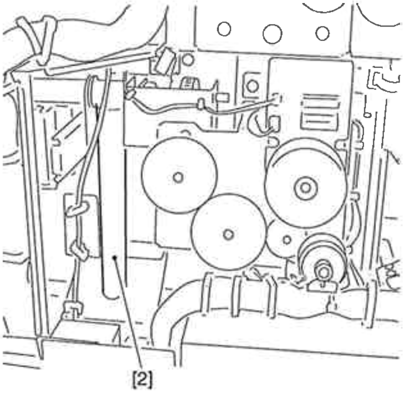


Figure 7-402

4) Turn the waste toner feeding motor [3] in the direction of the arrow so that the screw gear [5] moves away from the microswitch lever [4]. (If it does not move, the pipe is still filled with waste toner. Perform step 3) once again.)

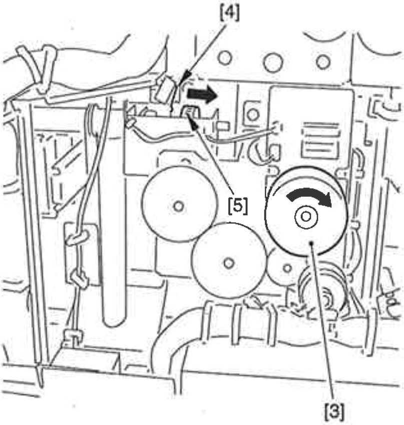


Figure 7-403

5) Turn on the power switch.
6) Execute 'FUNC' > 'F-MISCp' > 'MTR' in service mode to rotate the waste toner feeding motor. Check if the rotation is stable.
7) Dispose of the waste toner collecting inside the waste toner box.

7 E014

Cause	Step	Checks	Yes/No	Action
Fixing roller drive assembly, Fixing oil applying roller drive assembly, Feeding drive assembly	1	Is there a fault on the fixing roller (upper, lower), fixing oil applying roller, or the drive assembly of the feeding assembly? Or, is any of them subjected to excess load?	YES	Replace any faulty part, and remove the cause of the fault.
Fixing motor (M9)	2	Set the meter to the 12VDC range. Does the voltage between J2213A-6 (+; M9D*) and J2213A-7 (–; GND) on the DC controller PCB change from 5 V to 0 V after the power has been turned on, WMUP has ended, and INTR begins (i.e., when the temperature of the fixing roller reaches 110°C)?	YES	Replace the fixing motor unit.
DC controller PCB			NO	Check the wiring from J6070 on the fixing motor driver PCB to J2213A on the DC controller PCB; if normal, replace the DC controller PCB.

8	E015

Cause	Step	Checks	Yes/No	Action
Pick-up assembly feeding roller drive assembly (each cassette holder), Multifeeder pick-up roller drive assembly, Paper thickness detecting roller drive assembly, Registration roller drive assembly, Paper deck feeding roller drive assembly, Paper deck pick-up roller drive assembly, Duplexing unit pick-up roller drive assembly, Pick-up vertical path roller 1 drive assembly	1	Is there a fault in the pick-up assembly feeding roller drive assembly of each cassette holder, multifeeder pick-up roller drive assembly, or registration roller drive assembly? Or, is any of them subjected to an excess load?	YES	Remove the cause of the fault. Replace the faulty part. Moreover, remove the cause of the fault.
Pick-up motor (M10)	2	Set the meter to the 24VDC range. When the Start key is pressed, does the voltage between J2213A-10 (+; M10D*) and J2213A-11 (–; GND) on the DC controller PCB change from 5 V to 0 V?	YES	Replace the pick-up motor.
DC controller PCB			NO	Check the wiring from J6071 on the pick-up motor to J2213A on the DC controller; if normal, replace the DC controller PCB.

9 E017

Cause	Step	Checks	Yes/No	Action
Duplexing feeding drive assembly	1	Is there a fault (e.g., excess load) in the roller drive assembly driven by the duplexing unit feeding motor?	YES	Remove the cause of the fault.
Duplexing unit feeding motor (M19)	2	Set the meter to the 24VDC range. Select two-sided mode, and press the Start key; does the voltage between J2223B-8 (+) and J2223B-9 (–) on the DC controller PCB change from 5 V to 0 V?	YES	Check the wiring from the DC controller to the duplexing feeding motor; if normal, replace the duplexing feeding motor.
DC controller PCB			NO	Replace the DC controller PCB.

10 E018

Cause	Step	Checks	Yes/No	Action
Polishing/Oil removing motor drive system	1	Push the one-way clutch lever to rotate the polishing roller. Is there any fault (e.g., excess load)?	YES	Remove the cause of the fault.
Polishing/Oil removing motor (M15)	2	Set the meter to the 24VDC range, and select manual feed mode. When the Start key is pressed, does the voltage between J2218A-11 (reversal signal) and J2218A-12 on the DC controller PCB change from 7 V to 0 V?	YES	Check the wiring from the DC controller to the polishing/oil removing motor; if normal, replace the polishing/oil removing motor.
DC controller PCB			NO	Replace the DC controller PCB.

11 | E020

- Check the detail code of 'E020' using 'JAM/ERR' under 'DISPLAY' in service mode.

a. E020=XX30, XX31, XX35, XX36, XX3A, XX3B, XX40, XX41, XX42, XX43, XX45, XX46, XX47, XX48, XX50, XX55, XXA0, XXA1, XXA5, XXA6, XXAA, XXB0, XXB1, XXB2, XXB5, XXB6, XXB7 XXBF (high-order 2 digits representing the color as XX=00 indicating all colors; 01, Y; 02, M; 03, C; and 04, Bk.)

Cause	Step	Checks	Yes/No	Action
Initial value setting faults	1	Execute 'FUNC' > 'INSTALL' > 'INIT-Y/M/C S!NIT-Y/M/C/K' in service mode once again for the color for which 'E020' is indicated. Is the problem corrected?	YES	End.
Developing assembly (un-even toner density)	2	Execute 'STIR' for the color for which 'E020' is indicated for 'INSTALL' under 'FUNC' in service mode. Is the problem corrected?	YES	End.
Developer	3	Replace the developer of the color for which 'E020' is indicated, and execute 'INIT' of 'INSTALL' under 'FUNC'. Is the problem corrected?	YES	End.
Connector, Wiring	4	Are the connectors and wiring of the following connectors normal? DC Controller PCB M, C: J1002A Y, K: J1002B Connectors M: J111A, J111B C: J112A, J112B Y: J113A, J113B K: J114A, J114B Developing Assemblies M: J107 C: J108 Y: J109 Drum K: J110	NO	Re-connect them.

Cause	Step	Checks	Yes/No	Action
	5	Is 'E020' for the SALT sensor? Detailed code XXXX ↑ Numeral: SALT sensor Alphabet: toner density sensor	YES	Go to step 7.
Toner density sensor	6	Replace the toner density sensor of the color for which 'E020' is indicated. Is the problem corrected?	YES	End. • Be sure to replace the developer after replacing the toner density sensor.
DC controller PCB			NO	Replace the DC controller PCB.
SALT sensor	7	Is the front cover open while the transfer frame front cover is removed (i.e., is the SALT sensor subject to stray light)?	YES	Install the transfer frame front cover.
			NO	Replace the SALT sensor. • Be sure to replace the developer after replacing the toner density sensor.
Photosensitive drum	8	Replace the photosensitive drum. Is the problem corrected?	YES	End.
			NO	Replace the DC controller PCB.

b. E020=XX60, XX70

Cause	Step	Checks	Yes/No	Action
Photosensitive drum	1	Is the photosensitive drum soiled?	YES	Replace the cleaning blade. Be sure to clean the SALT sensor as well.
SALT sensor	2	Clean the window of the SALT sensor. Is the problem corrected?	YES	End.
			NO	Check the wiring from the DC controller PCB to the SALT sensor; if normal, replace the SALT sensor.

c. E020=XX80, XX81, XX82, XX85, XX86, XX87, XX8F, XXC0, XXC1, XXC2, XXC5, XXC6, XXC7

Cause	Step	Checks	Yes/No	Action
Backup data	1	Of 'INSTALL' under 'FUNC' in service mode, is the value on the 3rd, 4th page the same as that indicated on the service label?	NO	Enter the value of 'DC-CON' under 'FUNC' in service mode.
DC controller PCB	2	Replace the DC controller PCB. Is the problem corrected?	YES	End. Perform the steps indicated for replacing the DC controller PCB.

d. E020=XX90, XX91

Cause	Step	Checks	Yes/No	Action
SALT sensor (dirt)	1	Is the window of the SALT sensor soiled with toner?	YES	Clean it.
SALT sensor shutter	2	Is the opening/closing operation of the SALT sensor shutter normal?	NO	Check the shutter for deformation. Clean the inside by referring to 3. "Disassembling and Cleaning the Inside of the SALT Sensor" under E. (SALT Sensor" in Chapter 4 "Mechanical System."
Shutter open/close solenoid			YES	Check the wiring from the DC controller 2 to the solenoid; if normal, replace the solenoid.

e. E020=XX4A, XX4B, XX4C, XX4D, XXBA, XXBB, XXBC, XXBD, XXD0, XXE0

Cause	Step	Checks	Yes/No	Action
	1	Perform "Checking E020" on the next page. Is 'E020' still indicated?	NO	End.
Developing assembly (uneven toner density)	2	Execute 'STIR-M/C/Y/K' of 'INSTALL' under 'FUNC' in service mode for the color in question. Is the problem corrected?	YES	End.
Developer	3	Replace the developer of the color for which 'E020' is indicated, and execute 'INIT' of 'INSTALL' under 'FUNC'. Is the problem corrected?	YES	End. • Check the counter. If the developers of other colors are near the ends of their lives, replace all developers.
	4	Is 'E020' for the SALT sensor? Detailed code XXXX ↑ Numeral: SALT sensor Alphabet: toner density sensor	YES	Go to step 6.
Color toner density sensor	5	Replace the toner density sensor of the color for which 'E020' is indicated. Is the problem corrected?	YES	End.
			NO	Go to step 8.
SALT sensor	6	Replace the SALT sensor. Is the problem corrected?	YES	End.
			NO	Go to the next step.
Photosensitive drum	7	Replace the photosensitive drum. Is the problem corrected?	YES	End.
Developing cylinder	8	Does the developing cylinder of the color for which 'E020' is indicated rotating?	NO	Check the developing cylinder drive system.
Toner level sensor	9	Is toner present inside the hopper? (Is the level of toner inside the hopper for which 'E020' is indicated above the toner sensor?)	NO	Check the toner level sensor inside the hopper.
Hopper	10	Replace the toner level sensor. Is the problem corrected? (To supply toner, follow the instructions on p. 7-22.)	YES	End.
			NO	Replace the hopper. (To supply toner, see p. 7-22.)

Checking E020

1) Identify the color for which 'E020' has been indicated using 'JAM/ERROR' under 'DISPLAY' in service mode.
2) Turn OFF and then ON the power switch, and select the following mode:
   - A3/11" × 17"
   - 21 copies
   - mono copy of the color for which 'E020' has been indicated.
3) Start service mode, and select 'DENS/VCONT' under 'DISPLAY'.
4) Place a stack consisting of several A3/11" × 17" sheets of paper on the copyboard glass, and press the Start key.
5) Check the following two points:
   - Normal if the value of 'DENS' for the color for which 'E020' is indicated approaches '0'.
   - Is 'E020' indicated after copying?

f. E020=XXF1, 04F2

Cause	Step	Checks	Yes/No	Action
	1	Is the detailed code '04F2'?	YES	Go to step 4.
YMC hopper	2	Is the level of toner inside the hopper for which 'E020' is indicated above the toner sensor?	YES	Replace the hopper. (To supply toner, see p. 7-22.)
YMC error sensor	3	Disconnect the connector of the toner level sensor (front of toner). Replace the error sensor (hopper rear). After replacement, is the Add Toner message indicated?	YES	Connect the connector of the toner level sensor, and supply the hopper with toner. (To supply toner, see p. 7-22.)
			NO	Replace the hopper. (To supply toner, see p. 7-22.)
Bk hopper	4	Is the level of toner inside the Bk hopper above the toner sensor?	YES	
SALT sensor	5	Replace the Bk toner level sensor (upper). Is the Add Toner message indicated?	NO	
			YES	End. (To supply toner, see p. 7-22.)

12 E023

Cause	Step	Checks	Yes/No	Action
	1	Check the detail code of E023 using 'JAM/ERR' under 'DISPLAY' in service mode.		
Developing assembly	2	Remove the developing assembly for which 'E023' is indicated. Turn the cylinder gear in its normal direction. Does it turn smoothly?	NO	Check the inside of the developing assembly for foreign matter. Check the drive system for damage to gear.
Developing motor drive system	3	Do the belt and the pulley rotate smoothly?	NO	Check the gears of the drive system for damage and fault.
Developing motor for Y (M18Y) for M (M18M) for C (M18C) for Bk (M18K)	4	Set the meter to the 12VDC range. When the Start key is pressed, does the voltage between the following terminals on the DC controller PCB change from 5 V to 0 V? for Y J2226A-7 (+) — J2226A-8 (–) for M J2226A-10 (+) — J2226A-11 (–) for C J2223B-2 (+) — J2223B-3 (–) for Bk J2223B-5 (+) — J2223B-6 (–)	YES	Replace the developing motor.
DC controller PCB			NO	Replace the DC controller PCB.

13 E030

Cause	Step	Checks	Yes/No	Action
	1	Does the total copy counter operate normally?	NO	See "The counter fails to operate."
DC controller PCB			YES	Replace the DC controller PCB.

14 E040

- Check the detail code of 'E040' using 'JAM/ERR' under 'DISPLAY' in service mode.

a. E040=0101, 0102

Cause	Step	Checks	Yes/No	Action
Drive gear, Lever	1	Is the up/down movement of the lifter of the multifeeder smooth? (See the descriptions on how to release the lifter.)	NO	Check the drive gear and the lever.
Lifter sensor (PS3, PS2)	2	Is the lifter sensor (PS2, PS3) normal? (See the instructions on how to check photointerrupters.)	NO	Check the lever and the wiring; if normal, replace the sensor.
Multifeed lifter motor (M1)	3	Turn OFF the power switch, and disconnect the connector J2239 from the DC controller PCB. Set the meter to the X100Ω range, and measure the resistance between the following terminals on the motor side. Is it about 60Ω? J2239B-5 and J2239B-6	NO	Check the wiring from the connector to the motor; if normal, replace the motor.
DC controller PCB			YES	Replace the DC controller PCB.

b. E040=0201, 0301

Cause	Step	Checks	Yes/No	Action
Cassette size detecting switch	1	Is the size of the cassette indicated on the message display?	NO	Check the cassette size detecting switch.
Gear, Lever	2	Slide out the cassette, and move the lifter up by hand. Does it move smoothly?	NO	Remove the pick-up assembly, and check the gear and lever.
Cassette (latch)	3	Is the movement of the latch assembly of the grip on the cassette normal?	NO	Re-install it.
Spring, Lever	4	Push up the pick-up roller releasing lever by a finger. Does the pick-up roller move down?	NO	Remove the pick-up assembly, and check the spring and the lever.
Lifter position sensor	5	Is the lifter sensor (PS24, PS26) normal? (See the instructions on how to check photointerrupters.)	NO	Check the lever and the wiring; if normal, replace the sensor.
Cassette 1 lifter motor (M16), Cassette 2 lifter motor (M17)	6	Turn OFF the power switch, and disconnect the connector J2222 from the DC controller PCB. Set the meter to the X100Ω range, and measure the resistance between the following terminals on the motor side. Is it about 60Ω? M16: J2222A-7 and J2222A-6 M17: J2222A-11 and J2222A-6	NO	Check the wiring from the connector to the motor; if normal, replace the motor.
Cassette lifter motor	7	Connect the connector, and turn ON the power switch. Set the meter to the 30VDC range, and connect the – probe to GND and the + probe to the following. Does the reading of the meter change from about 0 V to about 24 V when the cassette is slid in? M16: J2222A-7 M17: J2222A-11	YES	Remove the pick-up assembly, and check the gear; if normal, replace the motor.
DC controller PCB			NO	Replace the DC controller PCB.

15 E041

- Take note of the position of the lifter when 'E041' is indicated.
- Check the detail code of 'E041' using 'JAM/ERR' under 'DISPLAY' in service mode.

a. E041=0001

Cause	Step	Checks	Yes/No	Action
	1	Has the lifter moved up to push the switch when 'E041' is indicated?	NO	Go to step 3.
Lifter upper limit switch (SW8001)	2	Turn OFF and ON the power switch to clear 'E041'. Does bit 4 of address 801004 under 'DISPLAY/SENSOR' in service mode change when the lifter upper switch (SW8001) is pressed by a finger?	NO	Check the wiring from the switch to the DC controller; if normal, replace the sensor.
			YES	Replace the DC controller PCB.
Paper deck motor (M8001)	3	Turn OFF and ON the power switch, and open the paper deck cover. Does the voltage between J2223A-4 (+) and J2223A-3 (–) on the DC controller change from 0 V to 24 V when closing the cover?	YES	Check the drive system and wiring from the motor; if normal, replace the motor.
DC controller PCB			NO	Replace the DC controller PCB.

b. E041=0002

Cause	Step	Checks	Yes/No	Action
	1	Is the lifter down and pushing the switch when 'E041' is indicated?	NO	Go to step 3.
Lifter lower limit switch (SW8002)	2	Turn OFF and ON the power switch to clear 'E041'. Does bit 5 of address 801004 under 'DISPLAY/SENSOR' in service mode change when the lifter lower limit switch (SW8002) is pressed by a finger?	NO	Check the wiring from the switch to the DC controller PCB; if normal, replace the sensor.
			YES	Replace the DC controller PCB.
Paper deck motor (M8001)	3	Turn OFF and ON the power switch. Does the voltage between J2223-A-5 (+) and J2223A-3 (–) on the DC controller change from 0 V to 24 V when closing the cover?	YES	Check the drive system and wiring from the motor; if normal, replace the motor.
DC controller PCB			NO	Replace the DC controller PCB.

16 E050

Cause	Step	Checks	Yes/No	Action
Duplexing unit stacking guide home position sensor (PS29)	1	Is the sensor normal? (See the instructions on how to check photointerrupters.)	NO	Replace the sensor.
Operation (faulty)	2	Is there any obstacle in the operation path of the duplexing unit stacking guide?	YES	Remove it.
Duplexing unit stacking guide motor (M23)	3	Replace the motor. Is the problem corrected?	YES	End.
DC controller PCB			NO	Replace the DC controller PCB.

17 | E061

Cause	Step	Checks	Yes/No	Action
	1	Is the value of 'VCCRT' (MCYK) under 'ADJUST' in service mode the same as that recorded on the service label?	NO	Enter the value recorded in the service label.
	2	Check the detail code of 'E061' in 'JAM/ERR' under 'DISPLAY' in service mode.		Make the appropriate checks prescribed for each detail code.
Laser exposure system	3	Is the operation of the laser shutter normal?	NO	Check the shutter assembly.
	4	Is the laser power normal?	NO	Adjust it. If output is absent, replace the laser unit.
Video controller PCB	5	Is the connection of each connector on the video controller PCB normal?	YES	Replace the PCB.
Primary charging assembly	6	Is the primary charging assembly inserted properly?	NO	Re-install it.
	7	Are the charging wires of the primary charging assembly and the pre-primary charging assembly broken?	YES	Re-install the charging wire.
	8	Are the charging wires of the primary charging assembly and the pre-primary charging assembly soiled?	YES	Clean them or re-install them.
	9	Is there electrical continuity between charging wire, grid, and shielding plate? Further, is there a trace of leakage on the primary charging assembly or the pre-primary charging assembly?	NO	Replace the primary charging assembly.
	10	Is the grid broken, slack, or soiled?	NO	Replace the grid.

Cause	Step	Checks	Yes/No	Action
HVT2 PCB	11	Is the high-voltage output from the HVT2 PCB normal? Is the connection of each connector on the HVT2 PCB normal?	YES	Check the connectors on the HVT2 PCB and the high-voltage cable; if normal, replace the HVT2 PCB.
Pre-exposure lamp	12	Is the pre-exposure lamp normal? Turn on the pre-exposure lamp using 'I/O 45' of 'F-MISCp' under 'FUNC' in service mode. Is it normal?	NO	Check the wiring from the DC controller PCB to the pre-exposure lamp; if normal, replace the pre-exposure lamp.
Photosensitive drum	13	Is the photosensitive drum grounded?	NO	Ground it.
			YES	Replace the photosensitive drum.
Potential sensor	14	Clean the potential sensor. Is the problem corrected?	YES	End. Check the wiring from the DC controller PCB to the potential sensor; if normal, replace the potential sensor unit.
Environment sensor	15	Check the temperature and humidity using 'ANALOG' under 'DISPLAY' in service mode. Is the environment sensor normal?	NO	Check the wiring from the DC controller PCB to the environment sensor; if normal, replace the environment sensor.
			YES	Replace the DC controller PCB.

18 E062

- Check the detail code of 'E062' using 'JAM/ERR' under 'DISPLAY' in service mode.

a. XX01

Cause	Step	Checks	Yes/No	Action
	1	Turn OFF and ON the power. Is 'E062' indicated?	NO	End.
DC controller PCB	2	Replace the AC driver PCB. Is the problem corrected?	YES	End.
AC driver PCB			NO	Replace the DC controller PCB.

b. XX02

Cause	Step	Checks	Yes/No	Action
	1	Turn OFF and ON the power switch. Is 'E062' indicated?	NO	End.
Drum heater	2	Measure the resistance between the following terminals on the AC driver PCB for the color for which 'E062' is indicated: for Y: J2805-1 and -7 for M: J2805-2 and -8 for C: J2805-3 and -9 for Bk: J2805-4 and -10 Is the reading of the meter 'OL'?	YES	Check the wiring from the AC driver PCB and the drum heater; if normal, replace the drum heater.
			NO	See "The drum heater fails to turn ON."

c. 0010

Cause	Step	Checks	Yes/No	Action
Drum thermistor	1	Disconnect J2216A from the DC controller PCB, and measure the resistance of the terminals on the harness side: for Y: J2216A-4 and J2216A-5 for M: J2216A-9 and J2216A-10 for C: J2216B-4 and J2216B-5 for Bk: J2216B-9 and J2216B-10 Is the resistance 10 kΩ or more?	NO	Check the wiring up to the drum thermistor; if normal, replace the drum thermistor.
DC controller PCB			YES	Replace the DC controller PCB.

19 E070

Cause	Step	Checks	Yes/No	Action
Transfer belt	1	Is the orientation of the transfer belt normal?	NO	Install it correctly.
Joint detecting seal	2	Is the seal soiled or peeling?	NO	Clean it or replace it.
Transfer belt home position sensor (PS16)	3	Is the sensor normal? (See the instructions on how to check photointerrupters.)	NO	Replace the sensor.
Operation (faulty)	4	Turn the transfer belt drive shaft by a finger. Does it turn smoothly? (Take care not to touch the transfer belt.)	NO	Remove the cause of poor rotation.
DC power supply PCB	5	Turn OFF and ON the power switch to clear 'E070'. Is 25 V present at J3201-2 and 5 V at J3201-4 on the transfer belt drive PCB?	NO	Check the wiring from the DC power supply PCB to the transfer belt driver PCB; if normal, replace the DC power supply PCB.
Transfer belt motor (M14)	6	Turn OFF and ON the power switch. Does the voltage at J2219B-4 on the DC controller PCB change from 5 V to 0 V?	YES	Check the wiring from the DC controller PCB to the transfer belt motor; if normal, replace the transfer belt motor.
DC controller PCB			NO	Replace the DC controller PCB.

20	E072

Cause	Step	Checks	Yes/No	Action
Transfer belt cleaning web rotation sensor (PS10)	1	Is the sensor normal? (Check the instructions on how to check photointerrupters.)	NO	Replace the sensor.
Operation (faulty)	2	Turn the web drive shaft by a finger. Does it turn smoothly?	NO	Remove the cause of poor rotation.
Transfer belt cleaning web motor (M12)	3	Turn OFF and ON the power switch; then, select two-sided copying mode, and press the Start key. Does the voltage at J2218A-4 on the DC controller PCB change from 0 V to 24 V?	YES	Check the wiring from the DC controller PCB to the transfer belt cleaning web motor; if normal, replace the transfer belt web motor.
DC controller PCB			NO	Replace the DC controller PCB.

21 E073

Cause	Step	Checks	Yes/No	Action
Transfer frame drawer connector, DC controller PCB	1	Is the transfer frame drawer connector soiled with toner or damaged?	YES	Clean and replace the drawer connector.
			NO	Check the wiring from J2218 on the DC controller PCB to the transfer frame drawer connector J6122; if normal, replace the DC controller PCB.

22 E074

Cause	Step	Checks	Yes/No	Action
Transfer belt lifter sensor 1 (PS12), 2 (PS13)	1	Is the sensor normal? (See the instructions on how to check photointerrupters.)	NO	Replace the sensor.
Operation (faulty)	2	Turn the transfer belt lifter drive shaft by a finger. Does it turn smoothly?	NO	Remove the cause of the faulty rotation.
Sensor (position)	3	Turn OFF and ON the power switch to clear 'E074'. Press the Start key, and check the operation of the lifter of the transfer belt by the eye. Does the transfer belt move up and down?	YES	Check the position of the sensor; if normal, replace the DC controller PCB.
Pick-up motor	4	Turn OFF and ON the power switch once again, and press the Start key. Does the pick-up motor rotate?	NO	Check the wiring; if normal, replace the pick-up motor.
Transfer belt lifter clutch (CL17)	5	Turn OFF and ON the power switch once again, and press the Start key. Does the voltage between J2226A-5 and J2226A-4 on the DC controller PCB change from 0 V to 24 V?	YES	Check the wiring from the clutch to the DC controller PCB; if normal, replace the clutch.
DC controller PCB			NO	Replace the DC controller PCB.

23 E075

- Check the detail code of 'E075' using 'JAM/ERR' under 'DISPLAY' in service mode.

a. E075=0001, 0002, 0003, 0004

Cause	Step	Checks	Yes/No	Action
Transfer belt edge sensor (PS17, PS18, PS19, PS20)	1	Is the sensor represented by the detail code in question normal? (See the instructions on how to check photointerrupters.)	NO	Check the operation; if normal; replace the sensor.
DC controller PCB	2	Operate the transfer belt shifting motor in service mode. Is operation noise heard?	YES	Check the drive system and the wiring; if normal, replace the DC controller PCB.
Transfer belt shifting motor (M12)	3	Replace the motor. Is the problem corrected?	YES	End.
DC controller PCB			NO	Replace the DC controller PCB.

b. E075=0005, 0006, 0007, 0008

Cause	Step	Checks	Yes/No	Action
Transfer belt edge sensor (PS17, PS18, PS19, PS20; flag operation)	1	Is the sensor represented by the detail code in question normal? (See the instructions on how to check photointerrupters.)	NO	Check the malfunction part, and remove the cause.
Transfer belt edge sensor	2	Is the sensor normal? (See the instructions on how to check photointerrupters.)	NO	Check the wiring from the DC controller PCB to the sensor; if normal, replace the sensor.
DC controller PCB			YES	Replace the DC controller PCB.

24 E100

a. E100=xx01

Cause	Step	Checks	Yes/No	Action
Laser shutter	1	Is the operation of the laser shutter normal?	NO	Replace the faulty part.
DC power supply PCB 1 (lower)	2	Is power present at J2101 on the DC controller PCB? J2101-1 (+) — J2101-4 (–): 5V J2101-8 (+) — J2101-9 (–): –8V J2101-7 (+) — J2101-8 (–): 8V	NO	Check the wiring; if normal, replace the DC power supply PCB 1 (lower).
Video controller PCB, Laser driver PCB	3	Is there a fault in the connection between the video controller PCB and the laser driver PCB of the color for which 'E100' is indicated? Y (detail code: 0101) :J2106 — J1301Y M (detail code: 0201) :J2107 — J1301M C (detail code: 0301) :J2108 — J1301C Bk (detail code: 0401) :J2109 — J1301K	YES	Re-connect it.
Laser exposure system	4	Is the laser power normal?	NO	Adjust it. If output is absent, replace the laser unit.
BD unit	5	Clean the light-receiving face of the BD unit. Is the problem corrected?	YES	End.
BD unit, Laser driver PCB			NO	Replace the following parts in the order indicated: • BD unit • Video controller PCB

You can find out whether the cause of 'E100' has been removed or not by executing 'EPC' under 'FUNC'.

b. E100=xx02

Cause	Step	Checks	Yes/No	Action
DC power supply PCB 1 (lower)	1	Is power present at J2101 on the video controller PCB? J2101-1 (+)–J2101-4 (-): 5 V J2101-8 (+)–J2101-9 (-): -8 V J2101-7 (+)–J2101-8 (-): 8 V	NO	Check the wiring; if normal, replace the DC power supply PCB (lower).
Video controller PCB, Laser diver PCB	2	Is there a fault in the connection between the video controller PCB and the laser drive PCB of the color for which 'E100' is indicated? Y (detail code 0101) :J2106–J1301Y M (detail code 0201) :J2107–J1301M C (detail code 0301) :J2108–J1301C Bk (detail code 0401) :J2109–J1301K	YES	Re-connect it.
Laser exposure system	3	Is the laser power normal? (See "Adjusting the Laser Power."	NO	Make adjustments. If output is absent, replace the laser unit.
Laser unit, Video controller PCB, DC controller PCB			YES	Try replacing the following parts in sequence: • Laser unit • Video controller PCB • DC controller PCB

25 E110

Cause	Step	Checks	Yes/No	Action
DC power supply PCB 1 (upper)	1	Is power present at J6297 on the laser scanner motor driver PCB? J6297-3 (+) — J6297-1 (–): 24V J6297-4 (+) — J6297-2 (–): 24V	NO	Check the wiring: if normal, replace the DC power supply PCB 1 (upper).
Laser scanner motor driver PCB, DC controller PCB	2	Is there a fault in the connection between the laser scanner motor and J6035 or J6036 on the laser scanner motor driver PCB? Is there a fault in the connection between J2208B on the DC controller PCB and J6037 on the laser scanner motor driver PCB?	YES	Re-connect it.
			NO	Replace the following parts in the order indicated: • DC controller PCB • Laser scanner motor unit • Laser scanner motor driver

26 E194

a. E194=xx01, xx02, xx03

Cause	Step	Checks	Yes/No	Action
	1	Execute 'FUNC > INSTALL > REG-APER' in service mode. Is the execution normal?	YES	Go to step 4.
Transfer belt	2	Generate a test pattern (PG=07). Is the image position correction pattern normal?	NO	Check the transfer belt where the image position correction pattern is formed; if there are scratches, replace the transfer belt. Otherwise, perform the instructions given for image adjustments.
DC controller PCB	3	Replace the image position correction CCD unit. Is the problem corrected?	NO	Replace the DC controller PCB.
Pattern position	4	Generate a test pattern (PG=06, grid). Is the discrepancy from the M pattern in main scanning direction?	YES	Adjust the position using 'FUNC > IMG-REG > Y/C/K-REG-H' and 'Y/C/K-REG-HS' in service mode Thereafter, be sure to execute 'FUNC > INSTALL > REG-APER'.
			NO	Adjust the position using 'FUNC > IMG-REG-V' in service mode. Thereafter, be sure to execute 'FUNC > INSTALL > REG-APER'.

b. E194=0001, 0002

Cause	Step	Checks	Yes/No	Action
Shutter drive motor (M25)	1	Execute 'UFNC > F-MISCp > MTR' in service mode to operate the shutter. Does the shutter drive motor operate normally?	YES	Check the drive system; if normal, replace the motor.
Shutter open sensor (PS40)	2	Is the shutter open sensor (PS40) normal? (in the case of E194-0001)	NO	Replace the sensor.
Shutter closed sensor (PS39)	3	Is the shutter closed sensor (PS39) normal (if E194=0002)?	NO	Replace the sensor.
Shutter drive system	4	Check the shutter drive system as shown below. Does it move smoothly?	YES	Check the wiring; if normal, replace the DC controller PCB.
Parts (deformation, dirt)	5	Is the shutter screw assembly soiled?	NO	Check the wiring; if normal, replace the CCD unit used for image position correction.
			YES	Disassembly/clean the parts as shown next page.

- **Correcting E194=0001/0002**

1) Turn off the power switch.
2) Open the front cover.
3) Remove the image position correction CCD unit. (See the descriptions under "Removing the Image Position Correction CCD Unit" in Chapter 4.)
4) Remove the drive releasing pin [1], and dry moving the shutter [3] while holding the mobile member.

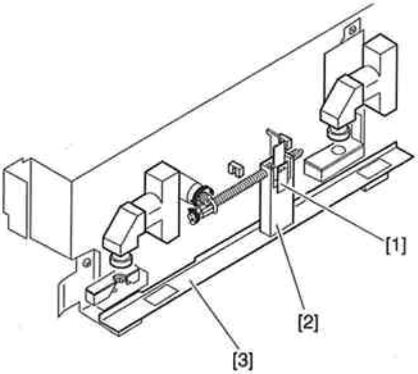


Figure 7-404

■ **Correcting E194-0001/0002**

1) Turn off the power switch.
2) Open the front cover.
3) Remove the image position correction CCD unit. (See the descriptions under "Removing the Image Position Correction CCD Unit" in Chapter 4.)
4) Remove the screw [2], and remove the support plate (front) [1].
5) Remove the screw [4], and remove the shutter [3]. (At this time, take care not to deform the grounding plate [5]. Take care also not to lose the screw [4]; it is a special screw.)
6) With lint-free paper, dry wipe the top and bottom faces of the shutter [3], top and bottom faces of the support plate (front) [1], and top and bottom faces of the support plate (rear) [6].

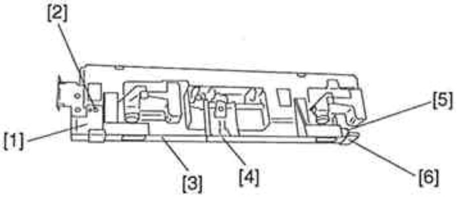


Figure 7-405

7) Dry wipe the LED [7] with lint-free papaer. At this time, do not apply excess force on the LED.

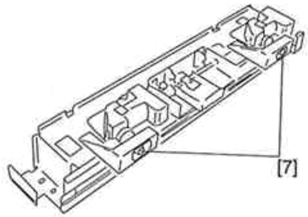


Figure 7-406

8) Install the shutter with a screw. (At this time, take care not to deform the grounding plate.)
9) Install the support plate (front) with a screw.

27 E208

Cause	Step	Checks	Yes/No	Action
DC power supply PCB 1 (upper)	1	Is power present at J601 on the scanner motor driver PCB? J601-2 (+) — J601-1 (–): 5V J601-4 (+) — J601-3 (–): 8V J601-6 (+) — J601-5 (–): 24V	NO	Check the wiring; if normal, replace the main power supply PCB.
Scanner motor driver PCB, Reader unit controller PCB	2	Is there a fault in the connection between J602A on the scanner motor driver PCB and J1306A on the reader unit controller PCB?	YES	Re-connect it.
			NO	Replace the following parts in the order indicated: • Scanner motor driver PCB • Reader controller PCB

28 E220

Cause	Step	Checks	Yes/No	Action
	1	Does the scanning lamp turn ON?	NO	See "The scanning lamp fails to turn ON."
Lamp regulator PCB, Reader unit controller PCB	2	Is there a fault in the connection between J1305A on the reader unit controller PCB and J6230 on the lamp regulator PCB?	YES	Re-connect it.
			NO	Replace the following parts in the order indicated: • Lamp regulator PCB • Reader controller PCB

29 E350/E352

Cause	Step	Checks	Yes/No	Action
	1	Execute 'AUTO-ADJ' of 'CCD' under 'FUNC' in service mode. Is the problem corrected?	YES	End.
Bar code label	2	Is the standard white plate soiled?	YES	Clean the standard white plate. If the dirt cannot be removed, replace the standard white plate, and execute 'AUTO-ADJ'.
CCD (adjustment)				

30 E351

Cause	Step	Checks	Yes/No	Action
Image processor PCB, IP-ECO PCB, IP-ECO relay PCB	1	Are the IP-ECO relay PCB and the IP-MOTHER PCB connected securely?	NO	Re-connect it.
			YES	Replace the following parts in the order indicated: • IP-ECO PCB • IP-MOTHER PCB • IP-ECO relay PCB

31 E620

Cause	Step	Checks	Yes/No	Action
Connector wiring	1	Is there a fault in the connection of the ED PCB, IP-memory PCB, or image processor PCB?	NO	Re-connect it.
			YES	Replace the following parts in the order indicated: • ED PCB • IP-memory PCB • Image processor PCB

32 E633

Cause	Step	Checks	Yes/No	Action
Connector, Wiring	1	Are the connection and the wiring of the following connector normal? Projector Controller PCB: J103	NO	Re-connect it.
Projector controller PCB	2	Set the meter to the 12VDC range, and measure the voltage between J107-1 (+; 5 V) and J107-2 (–; GND) on the projector controller PCB. Does it change from about 0 V to about 5 V when projector mode starts?	YES	Go to step 8.
Connector, Wiring	3	Are the connection and wiring between the following connectors normal? J107 on the projector controller PC and J203 on the DC power supply J102 on the projector controller PCB and SSR1	NO	Re-connect it.
DC power supply	4	Set the meter to the 300VAC range, and measure the voltage between J201-1 and -3 of the DC power supply. Is the rated AC voltage present when projector mode starts?	YES	Replace the DC power supply.
Overcurrent	5	Press the circuit breaker. Is it reset?	YES	Be sure to find out the cause of the overcurrent.
Reader unit controller PCB	6	Set the meter to the 30VDC range, and measure the voltage between J103-5 (+; 5 V) and J103-6 (–; POWON*) on the projector controller PCB. Does it change from about 0 V to about 5 V when projector mode starts?	NO	Replace the reader unit controller PCB.
SSR1	7	As in step 6, measure the voltage between J102-1 (+; 5 V) and J102-2 (–; POWON*). Does it change from about 0 V to about 5 V?	YES	Replace SSR1.
Projector controller PCB			NO	Replace the projector controller PCB.
Projector controller PCB	8	Replace the projector controller PCB. Is the problem corrected?	YES	End.
Reader unit controller PCB			NO	Replace the reader controller PCB.

33 E700

Cause	Step	Checks	Yes/No	Action
Connector, Wiring	1	Are the connection and wiring of the following connectors normal? J209 on the image processor PCB J308 on the DC controller PCB	NO	Re-connect it.
Wiring	2	Set the meter to the 30VDC range, and measure the voltage between J301-1 (+; 5 V) and J301-2 (–; GND) on the DC controller PCB. Is it about 5 V?	NO	Check the wiring from J301 to the DC power supply 1.
DC controller PCB			YES	Replace the DC controller PCB.

34 E800

Cause	Step	Checks	Yes/No	Action
Malfunction	1	Turn OFF and ON the power switch. Is the problem corrected?	YES	End.
J2 (poor connection)	2	Is the connection of the relay connector J2 on the power switch (SW1) secure?	NO	Connect it securely.
Power switch (SW1)	3	Set the meter to the ×1KΩ range. Disconnect the relay connector J2, and connect the probes of the meter to the following terminals of the connector (J2M) on the power switch side. Is the reading of the meter about 400Ω? • between J2M-1 and J2M-2 • between J2M-3 and J2M-4	NO	Replace the power switch (SW1).
DC controller PCB			YES	Check the wiring and electrical continuity from the DC controller PCB to the power switch (SW1); if normal, replace the DC controller PCB.

35 AC power is absent.

Cause	Step	Checks	Yes/No	Action
Power plug	1	Is the power plug connected to the power outlet?	NO	Connect the power plug.
Power source	2	Is the rated AC voltage present at the power outlet?	NO	The problem is not of the copier. Advise the user.
	3	Is the rated voltage present between F3 and F4 of RL1?	YES	Go to step 5.
Circuit breaker (CB1, CB2; faulty or OFF)	4	Check both terminals of the circuit breaker (CB1, CB2) for electrical continuity. Is it 0Ω?	NO	Press the button on the circuit breaker to check for electrical continuity; if not 0Ω, replace the circuit breaker (CB1, CB2).
Power cord, Line filter (LF1)			YES	Check or replace the power cord and the line filter (LF1).
Power switch (SW1; faulty)	5	Connect the probes of the meter to both terminals of the power switch (SW1). Is it 0Ω when the switch is turned ON, and ∞Ω when the switch is turned OFF?	NO	Replace SW1.
Wiring			YES	Check the wiring of the AC power line and connector for poor contact.

36 DC power is absent.

Cause	Step	Checks	Yes/No	Action
AC powr supply	1	Is AC power present between the following terminals? J5327M-1 and J5327M-4 on the DC power supply PCB 1 (upper) J5301M-1 and J5301M-3 on the DC power supply PCB 1 (lower) J5337-1 and J5337-3 on the DC power supply PCB	NO	See "AC power is absent."
Right cover switch (SW2, SW3)	2	Disconnect the power plug, and check the right cover switch for electrical continuity. Is it normal?	NO	Replace the right cover switch.
Wiring, DC load	3	Disconnect all connectors except for the following: J5327M on the DC power supply PCB 1 (upper) J5301M on the DC power supply PCB 1 (lower) J5337 on the DC power supply PCB 2 Connect the power plug, and turn ON the power switch. Is the DC power supply output of the above connectors on the DC power supply normal? ⚠ Be careful to avoid shorting the connectors. Keep in mind that +24VU and +214VR are not generated.	YES	Turn OFF the power switch, and connect one of the disconnected connectors; then, turn ON the power. Repeat this for all connectors to find out which connector activates the protection circuit. Check the wiring from that connector to the DC load.
DC power supply			NO	Replace the faulty DC power supply PCB.

37 The scanner fails to move forward/in reverse.

Cause	Step	Checks	Yes/No	Action
Cable (broken, displaced)	1	Is the drive cable routed correctly?	NO	Re-route the cable.
Obstacle in path	2	Is the rail free of dirt? Does the mirror mount move smoothly when pushed by hand?	NO	Check the rail for dirt or foreign object; as necessary, clean or lubricate. REF. If the surface of the rail is soiled, use alcohol to clean it; then, apply a small amount of silicone oil available for the fixing roller.
Scanner home position sensor (PS37)	3	Is the scanner home position sensor (PS37) normal? (See the instructions on how to check photointerrupters.)	NO	Check the wiring and light-blocking plate; if normal, replace the sensor.
Connector, Wiring	4	Are the connection of the following connectors and the wiring between the connectors normal? J602 on the scanner motor driver PCB J1306 on the reader unit controller PCB	NO	Re-connect it.
DC power supply	5	Set the meter to the 50VDC range, and measure the voltage between the following terminals on the scanner motor driver. Is it normal? J601-2 (+) and –1 (–): about 5 V J601-4 (+) and –3 (–): about 8 V J601-6 (+) and –5 (–): about 24 V	NO	See "DC power is absent."
Scanner motor driver	6	Replace the scanner motor driver. Is the problem corrected?	YES	End.
Scanner motor (M29)			NO	Replace the scanner motor.

38 The scanning lamp fails to turn ON.

Cause	Step	Checks	Yes/No	Action
Lamp	1	Turn OFF the power switch, and disconnect the power plug. Is the lamp installed properly?	NO	Re-install the lamp.
Thermal switch	2	Check both terminals of the thermal switch for electrical continuity using the meter. Is there continuity?	NO	Replace the thermal switch. • The lamp may have turned on wrongly, the thermal switch may have been mounted wrongly, or the cooling fan may have failed to operate. Make checks.
Lamp (open circuit)	3	Disconnect J135 (3P) on the lamp regulator, and set the meter to the 1kΩ range. Does the index of the meter swing when the probe is connected to the connector on the harness side?	NO	Check the wiring from J135 to the lamp; if normal, replace the lamp.
Lamp regulator overcurrent	4	Is there electrical continuity on the fuse on the lamp regulator?	NO	Replace the lamp regulator. • Check the lamp and the harness for a short circuit.
AC power supply	5	Connect J135, and disconnect J131 (4P). Connect the power plug, and turn ON the power switch. Set the meter to the 300VAC range, and measure the voltage between J131-1 and 4 on the harness side. Is the rated voltage present?	NO	See "AC power is absent."
DC power supply PCB	6	Turn OFF the power switch, and connect J131. Set the meter to the 50VEDC range, and turn ON the power switch. Is 24 VDC present between J6230-2 (+; 24 V) and J6230-1 (–; GND)?	NO	See "DC power is absent."
Lamp regulator PCB	7	Set the meter to the 50VDC range, and connect the probes to J6230-4 (+; LAON*) and J6230-1 (–; GND) on the lamp regulator PCB. Does the voltage change from about 24 V to about 0 V when the Start key is pressed?	YES	Replace the lamp regulator PCB.
Reader unit controller PCB			NO	Check the wiring from J6230 to J1305 on the reader unit controller PCB; if normal, replace the image processor PCB.

39 The lifter fails to move up (pick-up from the cassette).

Cause	Step	Checks	Yes/No	Action
Cassette	1	Slide out the cassette, and lift the holding plate inside the cassette. Does it move smoothly?	NO	Check the inside of the cassette for foreign matter.
Latch (cassette)	2	Is the movement of the latch assemblyof the cassette grip normal?	NO	Re-install it.
Spring, Lever	3	Push up the pick-up roller releasing lever by a finger. Does the pick-up roller move down?	NO	Remove the pick-up assembly, and check the spring and lever.
Lifter position sensor	4	Is the lifter position sensor normal?	NO	Check the lever and wiring; if normal, replace the sensor.
Cassette 1 lifter motor (M16), Cassette 2 lifter motor (M17)	5	Set the tester to the 30VDC range, and insert the cassette. Does the voltage between the following terminals change from about 0 V to about 24 V? M16: J2222A-7 (+), 6 M17: J2222A-11 (+), 6	YES	Check the wiring from the connector to the motor; if normal, replace the motor.
DC controller PCB			NO	Replace the DC controller PCB.

40 Pick-up fails (cassette 1).

Cause	Step	Checks	Yes/No	Action
	1	Does the "ADD PAPER" message remain ON?	YES	See "The 'ADD PAPER' message fails to turn OFF."
	2	Slide out and then in the cassette. Are the sounds of lifter lowering and of the lifter motor turning heard?	NO	See "The lifter fails to rotate."
Drive belt (displacement)	3	Is the drive belt attached properly?	NO	Re-attach it.
Registration roller drive clutch	4	Is the paper moved so that its leading edge reaches the registration roller assembly?	YES	See "The registration roller fails to rotate."
Gear	5	Is the drive from the pick-up motor transmitted to the cassette holder through the gears?	NO	Check the gears.
Pick-up/separation/feeding roller	6	Does the pick-up/separation/feeding roller rotate?	YES	• Check the pick-up/separation/feeding roller. • Check the guide plate for deformation and obstacles.
Drive clutch, Solenoid	7	Does the voltage between the following terminals on the DC controller PCB change at the pick-up timing? • Cassette 1 Pick-Up Roller Releasing Solenoid (SL9) J2222A-8 and J2222A-1 • Cassette 1 Pick-Up Roller Drive Clutch (CL2) J2222A-9 and J2222A-1 • Pick-Up Vertical Path Roller 1 Drive Clutch (CL11) J2222A-5 and J2222A-1 • Pick-up Vertical Path Roller 2 Drive Clutch (CL13) J2222A-10 and J2222A-1	YES	Check the wiring; if normal, replace the solenoid and clutch.
DC controller PCB			NO	Replace the DC controller PCB.

41 Pick-up fails (cassette 2).

Cause	Step	Checks	Yes/No	Action
	1	Does the "ADD PAPER" message remain ON?	YES	See "The 'ADD PAPER' message fails to turn OFF."
	2	Slide out and then in the cassette. Are the sounds of the lifter lowering and of the lifter motor turning heard?	NO	See "The lifter fails to move up."
Drive belt (displacement)	3	Is the belt for drive attached properly?	NO	Re-attach the belt.
Vertical path roller 1 clutch (CL11), Vertical path roller 2 clutch (CL13), Vertical path roller 3 clutch (CL15)	4	Do the vertical rollers 1, 2, and 3 rotate when the Start key is pressed?	NO	Check the wiring; if normal, replace the clutch.
Registration roller drive clutch	5	Is the paper fed so that its leading edge reaches the registration roller?	YES	See "The registration roller fails to rotate."
Gear	6	Is the drive of the pick-up motor transmitted to the cassette holder through the gears?	NO	Check the gears.
Pick-up/separation/feeding roller	7	Does the pick-up/separation/feeding roller rotate?	YES	• Check the pick-up/separation/feeding roller. • Check the guide plate for deformation and foreign objects.
Drive clutch, Solenoid	8	Does the "ADD PAPER" message remain ON even after the Start key has been pressed? After the Start key has been pressed, does the voltage between the following terminals on the DC controller PCB change at the pick-up timing? • Cassette 2 Pick-Up Roller Releasing Solenoid (SL10) J2222A-12 and J2222A-1 • Cassette 2 Pick-Up Roller Drive Clutch (CL14) J2222B-3 and J2222A-1	YES	Check the wiring; if normal, replace the solenoid and clutch.
DC controller PCB			NO	Replace the DC controller PCB.

42 The multifeeder fails to pick up paper.

Cause	Step	Checks	Yes/No	Action
Multifeeder pick-up clutch (CL6)	1	Select multifeeder pick-up, and press the Start key. Does the multifeeder pick-up roller rotate?	NO	Check the wiring; if normal, replace CL6.
Multifeeder pick-up roller	2	Is paper fed properly by the pick-up roller?	YES	Replace the pick-up roller.
Lifter plate	3	Press the Start key. Does the lifter plate move up?	NO	Check the lifter plate drive system. As necessary, adjust or replace it.
Paper thickness roller clutch (CL7)	4	Press the Start key. Does the roller rotate?	NO	Check the wiring; if normal, replace the clutch.
Multifeeder pick-up solenoid (SL5)	5	Connect the + probe of the meter to J2207A-3 on the DC controller PCB and press the Start key. Does the voltage change from about 24 V to about 0 V?	YES	Check the wiring; if normal, replace SL5.
DC controller PCB			NO	Replace the DC controller PCB.

43 The registration roller fails to rotate.

Cause	Step	Checks	Yes/No	Action
Gear	1	Is the drive from the pick-up motor (M10) transmitted through gears?	NO	Check the gears.
Registration roller clutch (CL8)	2	Turn OFF the power switch, and disconnect J2951 on the multifeeder relay PCB. Set the meter to the ×100Ω range, and measure the resistance between J2951-7 and -8 on the harness side. Is it about 120Ω?	NO	Check the wiring from J2951 to CL9; if normal, replace CL8.
Registration roller clutch (CL8)	3	Connect J2951, and turn ON the power switch. Set the meter to the 30VDC range, and measure the voltage between J2207A-4 and -6 on the DC controller PCB. Does it change from about 0 V to about 24 V after pick-up?	YES	Replace the clutch.
DC controller PCB			NO	Replace the DC controller PCB.

44 Retention fails.

Cause	Step	Checks	Yes/No	Action
Y transfer blade	1	Is the Y transfer blade locked in position properly?	NO	Check the locking mechanism for the transfer blade.
High-voltage cable	2	Is the connection of the high-voltage cable for Y transfer charging proper?	NO	Re-connect it.
Transfer belt	3	Is there a scratch or a dent in the transfer belt?	YES	Replace the belt.
Paper	4	Is paper curled or wavy?	YES	Replace the paper. Advise the user on the correct method of storing paper.
	5	Try fresh paper. Is the problem corrected?	YES	End.
	6	Try Canon-recommended paper. Is the problem corrected?	YES	Advise the user to use recommended paper.
	7	Is the problem noted on paper other than plain paper?	YES	

45 The pre-exposure lamp fails to turn ON.

Cause	Step	Checks	Yes/No	Action
Pre-exposure lamp (LA2)	1	Turn ON the power switch, and disconnect the connector J2239 from the DC controller. Set the meter to the ×100Ω range, and measure the resistance between the following terminals on the harness side. Is it about 20Ω? for Y, J2209B-1 and -2 for M, J2209B-3 and -4 for C, J2209B-5 and -6 for Bk, J2209B-7 and -8	NO	Check the wiring from J2209 to the pre-exposure lamp; if normal, replace the exposure lamp.
Pre-exposure lamp (LA2)	2	Connect J2239, and turn ON the power switch. Set the meter to the 30VDC range, and measure the voltage between the following terminals on the DC controller PCB. Does the voltage change from about 0 V to about 24 V? for Y, J2239A-1 and -2 for M, J2239A-3 and -4 for C, J2239A-5 and -6 for Bk, J2239A-7 and -8	YES	Replace the pre-exposure lamp.
DC controller PCB			NO	Replace the DC controller PCB.

46 The fixing heater fails to turn ON.

Cause	Step	Checks	Yes/No	Action
Connector	1	Are the fixing drawer connectors J6410 and J6019 and the connectors J2804 and J2808 on the AC driver PCB connected?	NO	Re-connect them.
	2	Draw out the fixing unit, and set the meter to the ×1Ω range. Does the index of the meter swing when the probe of the meter is connected to the terminal of the following connectors of the fixing drawer connector (J6410)? J6410-1 and -4 J6410-5 and -8	YES	Go to step 8.
Thermal switch (THS1, THS2)	3	Is there electrical continuity in the thermal switch?	NO	Replace the thermal switch.
Thermistor (THM1, THM2)	4	Set the meter to the ×1Ω range. Does the index of the meter swing when the probe of the meter is connected to the following connector of the fixing drawer connector (J6019)? J6019B-7 and -5 J6019B-7 and -6	YES	Replace the thermistor.
Upper heater (H1)	5	Does the index of the meter swing when the probe of the meter is connected to both terminals of the upper heater?	NO	Check the installation of the heater; if normal, replace the upper heater.
Lower heater (H2)	6	Does the index of the meter swing when the probes are connected to both ends of the lower heater?	NO	Check the installation of the heater; if normal, replace the lower heater.
AC harness			YES	Check the AC harness inside the fixing assembly.

Cause	Step	Checks	Yes/No	Action
AC power supply	7	Push in the fixing unit, and turn ON the power switch; then, set the meter to the 250VAC range. Does the index of the meter swing when the probes of the meter are connected to the following terminals of the faston of RL1? FT35 and FT40	NO	Check the power switch and the relay (RL1); if normal, see "AC power is absent."
Triac	8	Set the meter to the 10VDC range, and connect the probes of the meter to the terminals of the following connectors of the DC controller PCB. Does the index of the meter indicate '+5 V'? J2213-B11 and GND J2213-B10 and GND	YES	Check the wiring from relay RL1 to SSR and from the triac to the fixing assembly drawer connector; if normal, replace the triac.
DC controller			NO	Replace the DC controller PCB.

47 The drum heater fails to rotate.

Cause	Step	Checks	Yes/No	Action
Drum heater (H3, H4, H5, H6)	1	Set the meter to the ×100Ω range, and connect the probes of the meter to the terminals (J9-1, J9-3) of the heater. Does the index of the meter swing?	NO	Replace the drum heater.
Thermistor (THM4, 5, 6, 7)	2	Set the meter to the ×1000Ω range, and connect the probes of the meter to the following terminals. Does the index of the meter swing? THM4 (for Y): J2216A-4 and-5 THM5 (for Bk): J2216B-9 and -10 THM6 (for M): J2216A-9 and -10 THM7 (for C): J2216B-4 and -5	NO	Replace the thermistor.
Connector, Wiring	3	Are the connection and wiring of the following connectors normal? J9, J5, J6, J61 Power-saving switch Drum heater	NO	Re-connect them.
Drum heater brush	4	Disconnect the power outlet, and remove the drum heater brush cover. Is the contact of the drum heater brush normal?	NO	• Re-install the brush. • Replace the brush.
DC controller PCB	5	Install the drum heater brush cover, and connect the power plug. Set the meter to the 12VDC range, and measure the voltage between J653-5 (+; 5 V) and J653-6 (–; DHTRD*) on the DC controller PCB. Is it about 5 V?	YES	Replace the drum heater.
			NO	Replace the DC controller PCB.

48 The counter fails to operate.

<table>
<tr><th>Cause</th><th>Step</th><th>Checks</th><th>Yes/No</th><th>Action</th></tr>
<tr><td>Counter</td><td>1</td><td>Turn OFF the power switch, and disconnect the connector J2212 from the DC controller. Set the meter to the ×1KΩ range, and measure the resistance of the following counters:
<table>
<tr><th>Counter</th><th>+</th><th>–</th></tr>
<tr><td>CNT1</td><td>J2212B-8</td><td>J2212B-7</td></tr>
<tr><td>CNT2</td><td>J2212B-9</td><td>J2212B-7</td></tr>
<tr><td>CNT3</td><td>J2212B-10</td><td>J2212B-7</td></tr>
<tr><td>CNT4</td><td>J2212B-11</td><td>J2212B-7</td></tr>
<tr><td>CNT5</td><td>J2212B-12</td><td>J2212B-7</td></tr>
<tr><td>CNT6</td><td>J2212B-13</td><td>J2212B-7</td></tr>
</table></td><td>NO</td><td>Check the wiring from J2212 to the counter; if normal, replace the counter.</td></tr>
<tr><td>DC controller PCB</td><td rowspan="2">2</td><td rowspan="2">Connect the connector J2212, and set the meter to the 24VDC range. Does the voltage of the following connectors on the DC controller PCB change from about 24 V to about 0 V and then to 24 V when the Start key is pressed? Be sure to select a copying mode appropriate to the counter operation:
<table>
<tr><th>Counter</th><th>+</th><th>–</th></tr>
<tr><td>CNT1</td><td>J2212B-8</td><td>J2212B-7</td></tr>
<tr><td>CNT2</td><td>J2212B-9</td><td>J2212B-7</td></tr>
<tr><td>CNT3</td><td>J2212B-10</td><td>J2212B-7</td></tr>
<tr><td>CNT4</td><td>J2212B-11</td><td>J2212B-7</td></tr>
<tr><td>CNT5</td><td>J2212B-12</td><td>J2212B-7</td></tr>
<tr><td>CNT6</td><td>J2212B-13</td><td>J2212B-7</td></tr>
</table></td><td>NO</td><td>Replace the DC controller PCB.</td></tr>
<tr><td>Counter</td><td>YES</td><td>Replace the counter.</td></tr>
</table>

49 The cassette heater fails to operate.

Cause	Step	Checks	Yes/No	Action
Environment sensor	1	Is there a significant discrepancy between the temperature/humidity indicated under 'DISP' > 'ANALOG' in service mode and the readings of a thermometer/hygrometer in the room?	NO	Replace the sensor.
Thermal switch (THS4, THS6), Cassette heater (H4, H6)	2	Turn OFF the power switch, and disconnect the connector J6. Set the meter to the ×1Ω range. Does the index of the meter swing when the probe of the meter is connected to the terminals of the following connectors? Upper Cassette Heater J6M1-1 and J6M1-3 Lower Cassette Heater J6M2-1 and J6M2-3	NO	Replace the cassette heater.
Connector, Wiring	3	Are the connection and the wiring between the following connectors normal? J61, J62, power-saving switch, J6, J37 Set the meter to the 12VDC range.	NO	Re-connect them.
			YES	Check the wiring from the relay RL1 to the power saving switch and SSR2; if normal, replace SSR2.

50 Abnormal noise is heard.

Cause	Step	Checks	Yes/No	Action
Scanner system	1	Is the noise from the scanning system?	YES	Check the scanner motor, belt, cable, pulley, and rail. Check the mirror mount for an object that may come into contact.
Drum motor drive system	2	Is the noise from the drum unit?	YES	Check the drum motor drive system (drum motor, gear, photosensitive drum, flywheel).
Fan	3	Is the noise from the fan?	YES	Check the fan.
Developing motor drive system	4	Is the noise heard when only the developing motor is rotating? (Note 1)	YES	Check the developing motor drive system. Check the reciprocating operation of the developing assembly, cleaning screw, and cleaning blade.
Pick-up motor drive system	5	Is the noise heard when paper is picked up?	YES	Check the pick-up toner system and the hopper motor drive system.
Fixing motor drive system	6	Is it from the fixing assembly?	YES	Check the fixing motor drive system.
Transfer unit drive system	7	Is it from the transfer unit?	YES	Check the transfer unit drive system.
Waste toner feeding drive system	8	Is it from the waste toner feeding system?	YES	Check the waste toner feeding system.
Holding tray drive system	9	Is it from the holding tray unit?	YES	Check the holding tray drive system.

Note 1: When the noise is heard, do the following.

- If the problem is the cleaning blade, it is not clear which station is suffering from a strange noise. Make 10 solid copies using each color. If the problem is not corrected, dispose of the waste toner, and put 5 g of drum cleaner lubricating agent (FG2-1694) into the cleaning assembly.
- If the problem is the side scraper, replace the side scraper, and put a small amount of drum cleaning lubricant to the tip of the side scraper.
- If the problem is the side seal, clean the felt surface, and remove the drum cleaner.

V. TROUBLESHOOTING FEEDING PROBLEMS

A. Jams

The CLC1000 may be divided into the following blocks in terms of where paper tend to jam.

[1] Pick-up assembly
[2] Pick-up feeding assembly
[3] Transfer unit assembly
[4] Separation/pre-fixing feeding assembly
[5] Fixing/delivery assembly
[6] Delivery vertical path assembly, duplexing reversing assembly, pre-holding tray feeding assembly
[7] Duplexing unit stacking assembly, re-pick-up assembly

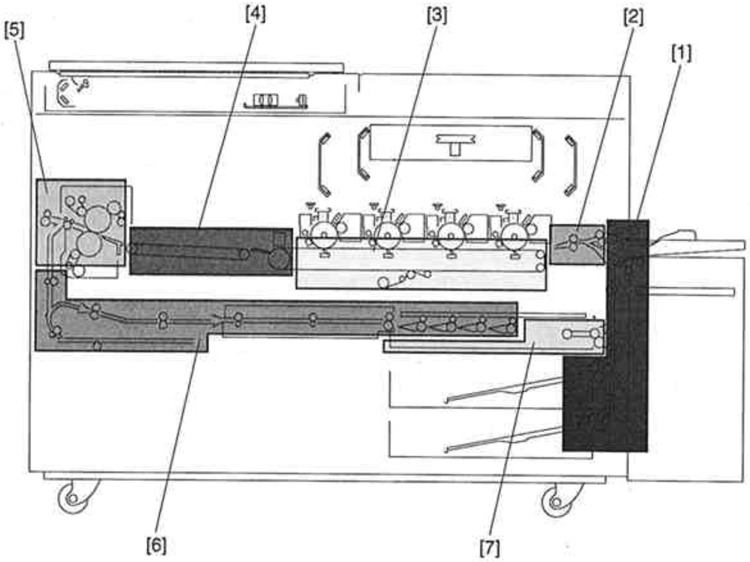
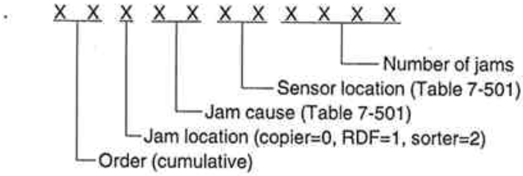


Figure 7-501

Use the CLC1000's service mode (control display mode) to check the location and the type of jam. The CLC1000 keeps records of jams by code and displays the result starting with the most frequent jam:

- Display


X X X X X X X X X X X
Number of jams
Sensor location (Table 7-501)
Jam cause (Table 7-501)
Jam location (copier=0, RDF=1, sorter=2)
Order (cumulative)

Cause code	Type
01xx	Delay jam
02xx	Stationary jam
10xx	Jam at power-on or when the front cover/pick-up cover/delivery cover is opened/closed
11xx	Jam when the front cover/pick-up cover/delivery cover is opened/closed during copying operation

Sensor code	Sensor name
xx01	Registration paper sensor
xx02	Pick-up vertical path 1 sensor
xx03	Pick-up vertical path 2 sensor
xx04	Pick-up vertical path 3 sensor
xx31	Post registration paper sensor
xx32	Separation sensor
xx33	Internal delivery sensor
xx34	Delivery sensor
xx61	Delivery vertical path sensor 1
xx62	Delivery vertical path sensor 2
xx63	Duplexing unit reversal sensor
xx64	Holding tray pre-feeding sensor 1
xx65	Holding tray pre-feeding sensor 2
xx66	Holding tray paper sensor 1
xx67	Holding tray paper sensor 2

Table 7-501

1 Pick-Up Assembly

Cause	Step	Checks	Yes/No	Action
	1	Was the paper picked up from the cassette?	NO	Go to step 11.
Cassette	2	Is the cassette properly set in the cassette?	NO	Set the cassette properly, and check the inside of the cassette for foreign matter.
Paper	3	Is the paper curled or wavy?	YES	Replace the paper, and advise the user on the correct method of storing paper.
	4	Try paper recommended by Canon. Is the problem corrected?	YES	Advise the user to use recommended paper.
Transparency	5	Is the transparency of the specified type, and is it oriented correctly?	NO	Advise the user to use transparencies of the specified type and to place them correctly.
DC controller PCB, Pick-up clutch	6	Does the pick-up roller of the selected cassette pick-up assembly rotate during copying?	NO	See IV. "Pick-up fails."
Pick-up roller	7	Is the pick-up roller deformed or worn?	YES	Replace the pick-up roller.
Separation roller	8	Is the separation roller of the selected cassette pick-up assembly deformed or worn?	YES	Replace the separation roller.
Feeding roller	9	Is the feeding roller of the selected cassette pick-up assembly deformed or worn?	YES	Replace the feeding roller.
Pick-up vertical path 1, 2, 3 sensor	10	Is each of the sensors (P21, PS25, PS27) of the pick-up assembly normal?	YES	Check each guide for foreign matter and deformation.
			NO	Check the lever and wiring; if normal, replace the sensor.
	11	Make copies in manual mode. Do the multifeeder pick-up roller and the paper thickness detecting roller rotate?	NO	See IV. "Multifeeder pick-up fails."
Paper	12	Try Canon-recommended paper. Is the problem corrected?	YES	Advise the user to use recommended paper.
Transparency	13	Is the transparency of the specified type, and is it oriented correctly?	NO	Advise the user to use transparencies of the specified type and to place them correctly.

Cause	Step	Checks	Yes/No	Action
Multifeeder pick-up roller	14	Is the multifeeder pick-up roller deformed or worn?	YES	Replace the multifeeder pick-up roller.
Multifeeder pick-up sensor	15	Is the operation of the multifeeder pick-up sensor (PS4, PS5) normal?	YES	Check the placement of the paper. Check each guide for foreign matter and deformation.
			No	Check the wiring to the sensor; if normal, replace the sensor.

2 Pick-up Feeding Assembly

Cause	Step	Checks	Yes/No	Action
Paper	1	Is the paper curled or wavy?	YES	Replace the paper. Advise the user on the correct method of storing paper.
	2	Try paper recommended by Canon. Is the problem corrected?	YES	Advise the user to use recommended paper.
Transparency	3	Is the transparency of the specified type, and is it oriented correctly?	NO	Advise the user to use transparencies of the specified type and to place them correctly.
Registration roller, Registration roller drive assembly	4	Does the registration roller/registration roller drive assembly operate normally?	NO	See IV. "The registration roller fails to rotate."
Registration roller	5	Is the registration roller deformed or worn?	YES	Replace the registration roller.
OHP sensor, Registration paper sensor, Post-registration paper sensor	6	Is the operation of each sensor (OHPS, PS1, PS14) of the pick-up feeding assembly normal?	YES	Check each guide plate for foreign matter and deformation.
			NO	Check the lever and wiring; if normal, clean/replace the part.

3 Transfer Unit Assembly

Cause	Step	Checks	Yes/No	Action
Transfer belt	1	Is the transfer belt soiled or deformed?	YES	Replace the transfer belt.
Transfer belt motor	2	Is the transfer belt rotating normally?	NO	Replace the transfer belt motor.
Retention	3	Is the jam paper retained on the transfer belt?	NO	See IV. "Retention fails."
Internal/external static eliminating roller	4	Is the internal/external static eliminating roller operating normally?	NO	Replace the faulty parts. Further, remove the cause.
Transfer belt cleaner assembly	5	Is there a fault in the transfer belt cleaner assembly? Further, is it subject to excessive load?	YES	Replace the problem part; in addition, remove the cause of the fault.
			NO	Replace the DC controller PCB.

4 Separation/Pre-Fixing Feeding Assembly

Cause	Step	Checks	Yes/No	Action
Separation charging assembly	1	Is the separation charging assembly operating normally?	NO	Check the separation charging assembly.
Separation claw	2	Is the separation claw worn or deformed?	YES	1. Replace the separation claw. 2. If soiled, clean with solvent.
Separation sensor	3	Is the separation sensor (PS15) operating normally?	NO	Check the lever and the wiring; if normal, replace the sensor.
Feeding belt	4	Is the feeding belt operating normally?	NO	Check the pre-fixing feeding motor.
			YES	Check the feeding belt; if wear or scratches are found, replace the belt.

5 Fixing/Delivery Assembly

Cause		Step	Checks	Yes/No	Action
Fixing assembly	Separation claw	1	Is the separation claw soiled?	YES	Clean it with solvent.
	Fixing roller drive assembly	2	Does the fixing roller rotate smoothly?	NO	Check the fixing roller drive assembly.
	Upper/lower roller	3	Is there deformation or scratches on the upper/lower roller?	YES	Replace the roller.
	Paper guide plate	4	Is the paper guide soiled with toner?	YES	Clean it with solvent.
	Nip	5	Is the lower roller pressure (nip) within specification?	NO	Adjust it.
	Web	6	Is the web taken up properly?	NO	Check the fixing assembly cleaner assembly.
Delivery assembly	Upper/lower thermistor	7	Is the surface of the thermistor soiled?	YES	Clean it with solvent.
	Delivery sensor lever	8	Does the delivery sensor lever operate smoothly?	NO	Adjust it so that it operates smoothly.
	Internal delivery/ delivery sensor	9	Does the internal delivery/delivery sensor (PS35, PS34) operate normally?	NO	Replace the sensor.
	Internal/ external delivery roller drive assembly	10	Does the internal/external delivery roller rotate smoothly?	NO	Check the delivery roller drive assembly.
	Delivery paper deflecting plate	11	Does the delivery paper deflecting plate operate normally?	NO	Check the delivery paper deflecting plate solenoid (SL14).
Oil applying assembly				YES	1. Check the oil applying roller drive assembly. 2. Check the level of the silicone oil.

6 Delivery Vertical Path, Duplexing Reversing Assembly, and Holding Tray Front Feeding Assembly

Cause		Step	Checks	Yes/No	Action
Delivery vertical path assembly	Delivery paper deflecting plate	1	Does the delivery paper deflecting plate operate normally?	NO	Check the delivery paper deflecting solenoid (SL14).
	Delivery vertical path roller	2	Does the delivery vertical path roller operate normally?	NO	Check the waste toner feeding motor drive assembly; if normal, check the reversal drive clutch (CL16).
	Vertical path 1 sensor, Vertical path 2 sensor	3	Does each sensor operate normally?	NO	Check the lever and the wiring; if normal, replace the sensor.
Duplexing unit reversing assembly	Inlet roller	4	Does the inlet roller operate normally?	NO	Check the duplexing unit reversing motor drive assembly.
	Feeding roller, Outlet roller	5	Does the feeding/outlet roller operate normally?	NO	Check the waste toner feeding motor drive assembly; if normal, check the reversal drive clutch (CL16).
	Duplexing unit reversal sensor	6	Does the duplexing unit reversal sensor operate normally?	NO	Check the lever and the wiring; if normal, replace the sensor.
	Feeding drive assembly	7	Does the feeding assembly operate normally?	NO	Check the duplexing feeding motor drive assembly.
Holding tray pre-feeding assembly	Duplexing paper deflecting plate	8	Is the duplexing paper deflecting plate operating normally?	NO	Check the duplexing paper deflecting plate solenoid (SL11).
	Holding tray front feeding sensor 1, 2	9	Does the holding tray front feeding sensor (PS8, PS9) operate normally?	YES	Check the guide plates and the duplexing unit feeding assembly for foreign matter and deformation.
				NO	Check the lever and the wiring; if normal, replace the sensor.

7 Duplexing Unit Stacking Assembly, Re-Pick-Up Assembly

Cause		Step	Checks	Yes/No	Action
Duplexing unit stacking assembly	Duplexing unit	1	Is the duplexing unit properly installed in the copier?	NO	Install it properly, and check the inside of the unit for foreign matter.
	Paper	2	Try Canon-recommended paper. Is the problem corrected?	YES	Advise the user to use recommended paper.
	Feeding roller	3	Does the feeding roller operate normally?	NO	Check the feeding roller solenoid (SL13).
		4	Is there deformation or dirt on the feeding roller?	YES	Replace the feeding roller.
	Holding tray paper sensor 1, 2	5	Does the holding tray paper sensor (PS30, PS31) operate normally?	NO	Check the lever and the wiring; if normal, replace the sensor.
	Paper jogging guide plate	6	Does the paper jogging guide plate operate normally?	NO	Check the duplexing unit stacking plate guide motor (M23); if normal, check the home position sensor (PS29).
Duplexing unit pick-up assembly	Stopper plate	7	Does the stopper plate operate normally?	NO	Check the stopper plate solenoid (SL12).
	DC controller PCB, Pick-up clutch	8	Does the pick-up roller of the duplexing unit pick-up assembly rotate while copying on the 2nd side of a two-sided copy?	NO	See IV. "Pick-up from the duplexing unit fails."
	Pick-up roller	9	Is the pick-up roller deformed or worn?	YES	Replace the pick-up roller.
	Separation roller	10	Is the separation roller of the duplexing unit pick-up assembly deformed or worn?	YES	Replace the separation roller.
	Feeding roller 1, 2	11	Is the feeding roller of the duplexing unit pick-up assembly deformed or worn?	YES	Replace the feeding roller.
				NO	Check the guide plates and the stacking assembly for foreign matter and deformation.

B. Feeding Faults

1 Double Feeding

Cause	Step	Checks	Yes/No	Action
Separation roller	1	Is the separation roller deformed or worn?	YES	Replace the separation roller.
Pressure spring			NO	Adjust the position of the pressure spring. Replace the pressure spring of the separation roller.

2 Wrinkles

Cause		Step	Checks	Yes/No	Action
Cassette pick-up assembly, Duplexing unit		1	Turn off the power while paper is moving through the pick-up vertical path assembly/pick-up feeding assembly. Is the paper wrinkled at this time? Is it moving askew?	YES	Check the pick-up assembly. Check the registration roller.
Paper		2	Try fresh paper. Is the problem corrected?	YES	The paper may be moist. Advise the user on the correct method of storing paper.
		3	Try Canon-recommended paper. Is the problem corrected?	YES	Advise the user to use recommended paper.
				NO	Check the heater of each pick-up assembly to see if it is operating normally.
Fixing assembly	Paper guide plate	4	Is the paper guide plate soiled with toner or the like?	YES	Clean it with solvent.
	Lower roller pressure	5	Is the lower roller pressure (nip) within specification?	NO	Adjust it.
	Upper/lower roller			YES	Try replacing the upper and then the lower roller.

VI. ARRANGEMENT AND FUNCTION OF ELECTRICAL PARTS

A. Sensors

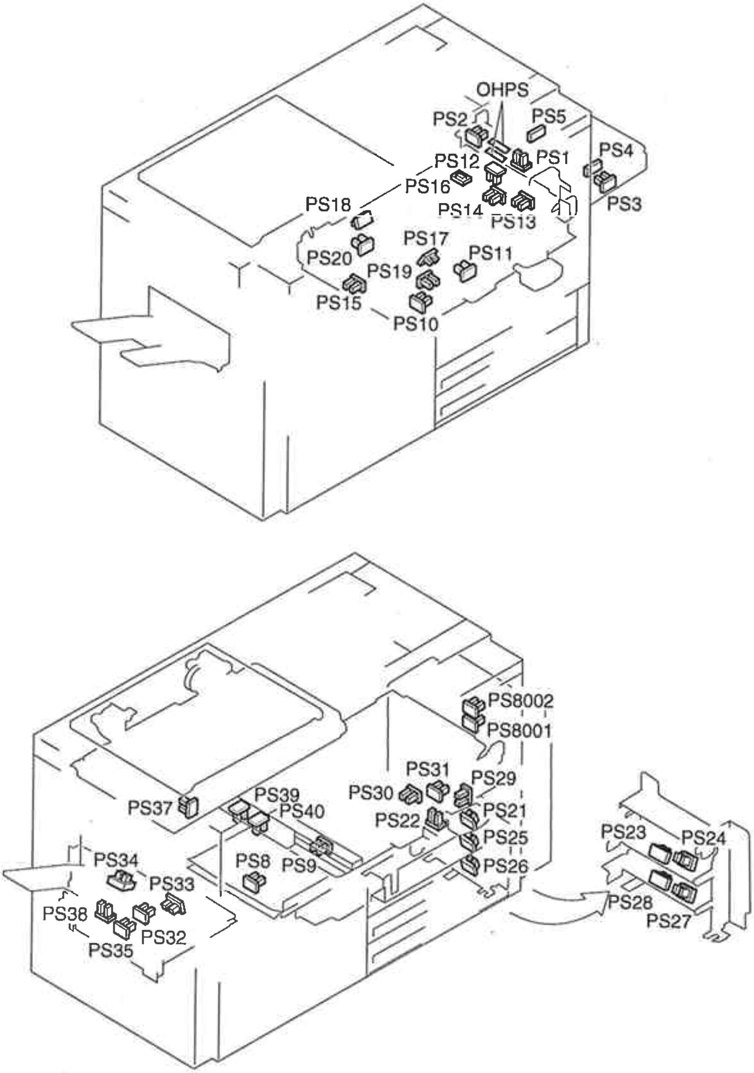

OHPS
PS2
PS5
PS4
PS12
PS1
PS16
PS3
PS18
PS14
PS13
PS17
PS20
PS11
PS19
PS15
PS10
PS8002
PS8001
PS31
PS29
PS30
PS39
PS37
PS40
PS21
PS22
PS23
PS24
PS25
PS34
PS8
PS9
PS26
PS33
PS28
PS38
PS27
PS32
PS35

Figure 7-601

Symbol	Name	Notation	Function/name
	Photointerrupter	PS1	Registration paper sensor
		PS2	Multifeeder lifter sensor (upper)
		PS3	Multifeeder lifter sensor (lower)
	Photosensor	PS4	Multifeeder paper sensor (front)
		PS5	Multifeeder paper sensor (rear)
		OHPS	Transparency sensor
	Photointerrupter	PS8	Pre-holding tray feeding sensor 1
		PS9	Pre-holding tray feeding sensor 2
		PS10	Transfer belt cleaning web rotation sensor
		PS11	Transfer belt cleaning web length sensor
		PS12	Transfer belt lifter sensor 1
		PS13	Transfer belt lifter sensor 2
		PS14	Post-registration paper sensor
		PS15	Separation sensor
	Photosensor	PS16	Transfer belt home position sensor
	Photointerrupter	PS17	Transfer belt edge sensor 1
		PS18	Transfer belt edge sensor 2
		PS19	Transfer belt edge sensor 3
		PS20	Transfer belt edge sensor 4
		PS21	Pick-up vertical path 1 sensor
		PS22	Paper deck connection sensor
		PS23	Cassette 1 paper sensor
		PS24	Cassette 1 lifter sensor
		PS25	Pick-up vertical path 2 sensor
		PS26	Pick-up vertical path 3 sensor
		PS27	Cassette 2 lifter sensor
		PS28	Cassette 2 paper sensor
		PS29	Duplexing unit stacking guide home position sensor
		PS30	Holding tray paper sensor 1
		PS31	Holding tray paper sensor 2
		PS32	Delivery vertical path sensor 2
		PS33	Duplexing unit reversal sensor
		PS34	Delivery sensor
		PS35	Internal delivery sensor
		PS36	Fixing web level sensor
		PS37	Scanner home position sensor
		PS38	Delivery vertical path sensor 1
		PS39	Shutter closed sensor
		PS40	Shutter open sensor
		PS8001	Paper deck paper absent sensor
		PS8002	Paper deck lifter position sensor

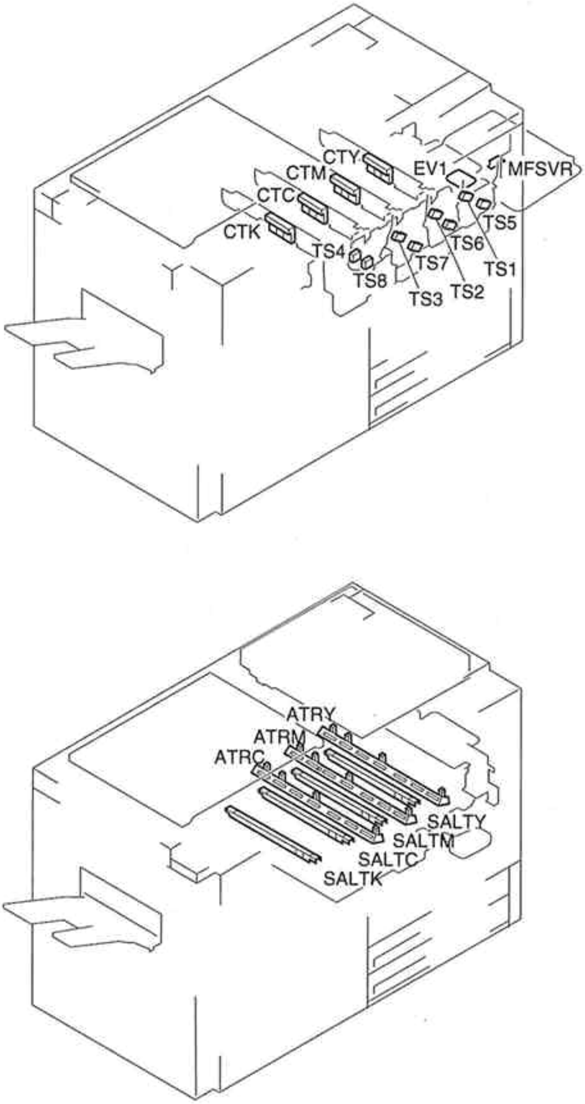
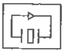

CTY
CTM
CTC
CTK
EV1
MFSVR
TS5
TS6
TS1
TS4
TS7
TS8
TS3
TS2
ATRY
ATRM
ATRC
SALTY
SALTM
SALTC
SALTK

Figure 7-602

Symbol	Name	Notation	Function/name
	Variable resistor unit	MFSVR	Multifeeder paper width sensor
	Toner level sensor	TS1	Y toner level sensor (upper)
		TS2	M toner level sensor (upper)
		TS3	C toner level sensor (upper)
		TS4	Bk toner level sensor (upper)
		TS5	Y toner level sensor (lower)
		TS6	M toner level sensor (lower)
		TS7	C toner level sensor (lower)
		TS8	Bk toner level sensor (lower)
	Toner density sensor	ATR•Y	ATR sensor (Y)
		ATR•M	ATR sensor (M)
		ATR•C	ATR sensor (C)
	SALT sensor	SALT•Y	SALT sensor (Y)
		SALT•M	SALT sensor (M)
		SALT•C	SALT sensor (C)
		SALT•K	SALT sensor (Bk)
	Potential sensor	CTY	Potential sensor (Y)
		CTM	Potential sensor (M)
		CTC	Potential sensor (C)
		CTK	Potential sensor (Bk)
	Environment sensor	EV1	Environment sensor

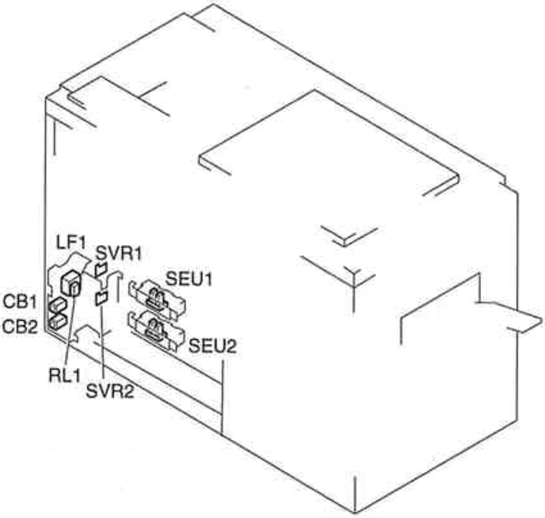
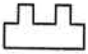
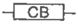
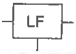

LF1
SVR1
SEU1
CB1
CB2
SEU2
RL1
SVR2

Figure 7-603

Symbol	Name	Notation	Function/name
	Paper length sensor (photointerrupter)	SEU1 SEU2	Cassette 1 paper length sensor unit Cassette 2 paper length sensor unit
	Variable resistor unit	SVR1 SVR2	Cassette 1 paper width sensor Cassette 2 paper width sensor
	Circuit breaker	CB1 CB2	CB1 CB2
	Relay	RL1	Fixing relay
	Noise filter	LT1	Noise filter

B. Lamps, Switches, Thermistors, and Heaters

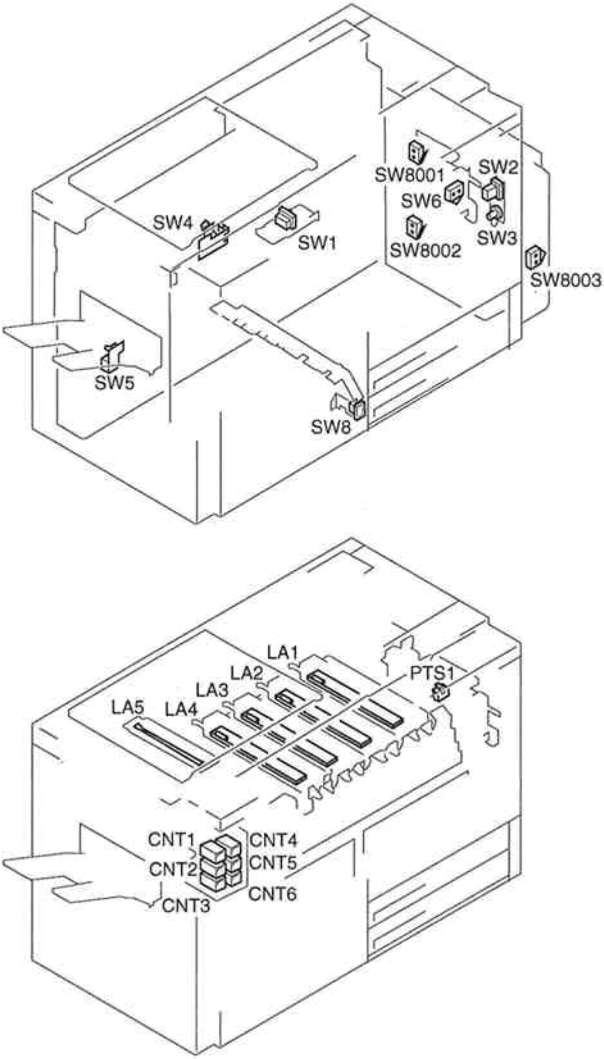
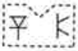
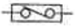
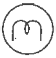

SW8001
SW2
SW6
SW4
SW1
SW8002
SW3
SW8003
SW5
SW8
LA1
LA2
PTS1
LA3
LA5
LA4
CNT1
CNT4
CNT2
CNT5
CNT3
CNT6

Figure 7-604

Symbol	Name	Notation	Function/name
	Photosensor	PTS1	Paper thickness sensor
	Switch	SW1	Front cover switch
		SW2	Power switch
		SW3	Control key switch
		SW4	Waste toner lock detecting switch
		SW5	Fixing lever switch
		SW6	Multifeeder open switch
		SW8	Power saving switch
		SW8001	Paper deck upper limit switch
		SW8002	Paper deck lower limit switch
		SW8003	Paper deck cover open/closed detecting switch
	Lamp	LA1	Pre-exposure lamp (Y)
		LA2	Pre-exposure lamp (M)
		LA3	Pre-exposure lamp (C)
		LA4	Pre-exposure lamp (Bk)
		LA5	Scanning lamp
	Counter	CNT1	Counter 1
		CNT2	Counter 2
		CNT3	Counter 3
		CNT4	Counter 4
		CNT5	Counter 5
		CNT6	Counter 6

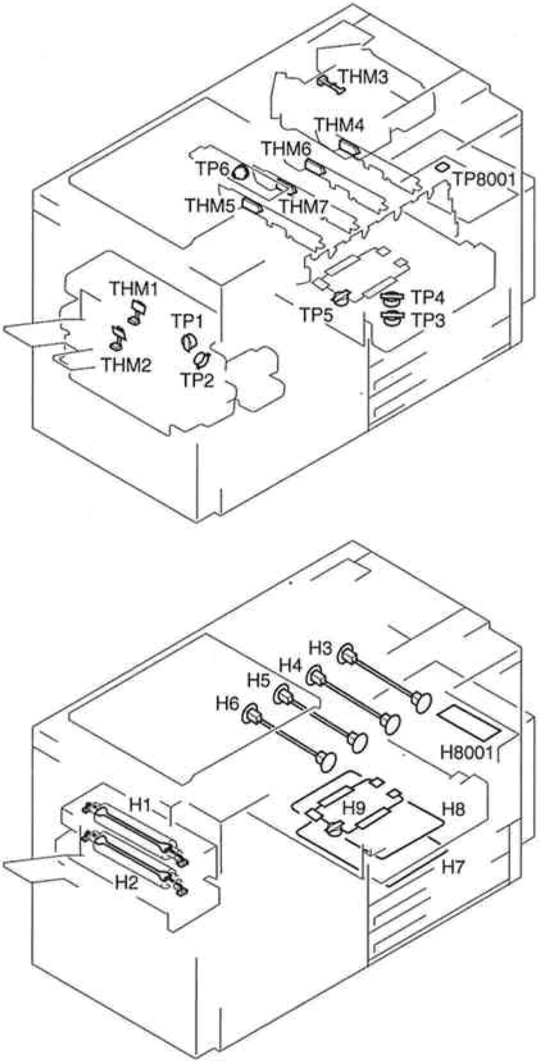
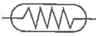
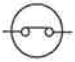
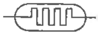

THM3
THM4
THM6
TP6
TP8001
THM5
THM7
THM1
TP1
TP5
TP4
TP3
THM2
TP2
H3
H4
H5
H6
H8001
H1
H9
H8
H7
H2

Figure 7-605

Symbol	Name	Notation	Function/name
	Thermistor	THM1	Upper fixing assembly thermistor
		THM2	Lower fixing assembly thermistor
		THM3	Polygon mirror scanner assembly thermistor
		THM4	Y drum thermistor
		THM5	Bk drum thermistor
		THM6	M drum thermistor
		THM7	C drum thermistor
	Thermal switch	TP1	Upper fixing assembly thermal switch
		TP2	Lower fixing assembly thermal switch
		TP3	Cassette 2 heater thermal switch
		TP4	Cassette 1 heater thermal switch
		TP5	Holding tray heater thermal switch
		TP6	Scanning lamp thermal switch
		TP8001	Paper deck heater thermal switch
	Heater	H1	Upper fixing heater
		H2	Lower fixing heater
		H3	Y drum heater
		H4	M drum heater
		H5	C drum heater
		H6	Bk drum heater
		H7	Cassette 2 heater
		H8	Cassette 1 heater
		H9	Holding tray heater
		H8001	Paper deck heater

C. Clutches

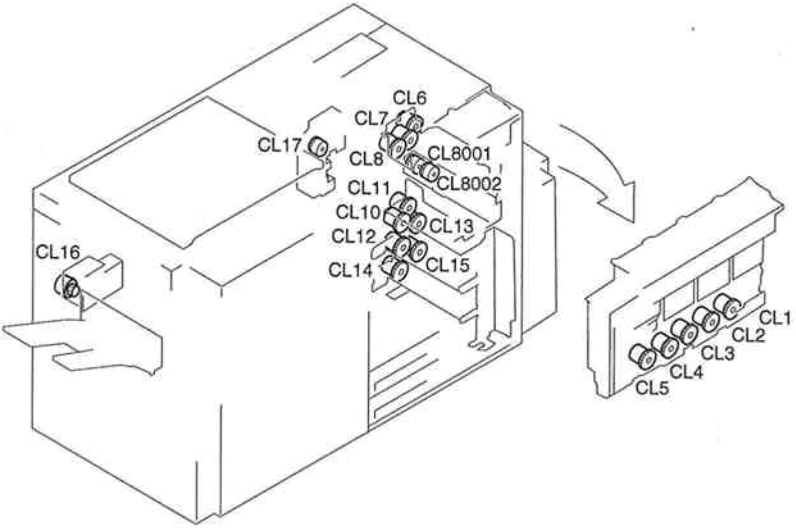
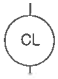

CL6
CL7
CL17
CL8
CL8001
CL8002
CL11
CL10
CL13
CL12
CL16
CL15
CL14
CL1
CL2
CL3
CL4
CL5

Figure 7-606

Symbol	Name	Notation	Function/name
	Clutch	CL1	Y toner supply clutch
		CL2	M toner supply clutch
		CL3	C toner supply clutch
		CL4	Bk toner supply clutch (upper)
		CL5	Bk toner supply clutch (lower)
		CL6	Multifeeder pick-up clutch
		CL7	Paper thickness detecting roller clutch
		CL8	Registration roller clutch
		CL10	Duplexing unit pick-up roller clutch
		CL11	Pick-up vertical path roller 1 clutch
		CL12	Cassette 1 pick-up clutch
		CL13	Pick-up vertical path roller 2 clutch
		CL14	Cassette 2 pick-up clutch
		CL15	Pick-up vertical path roller 3 clutch
		CL16	Reversal drive clutch
		CL17	Transfer belt lifter clutch
		CL8001	Paper deck feeding clutch
		CL8002	Paper deck pick-up clutch

D. Solenoids

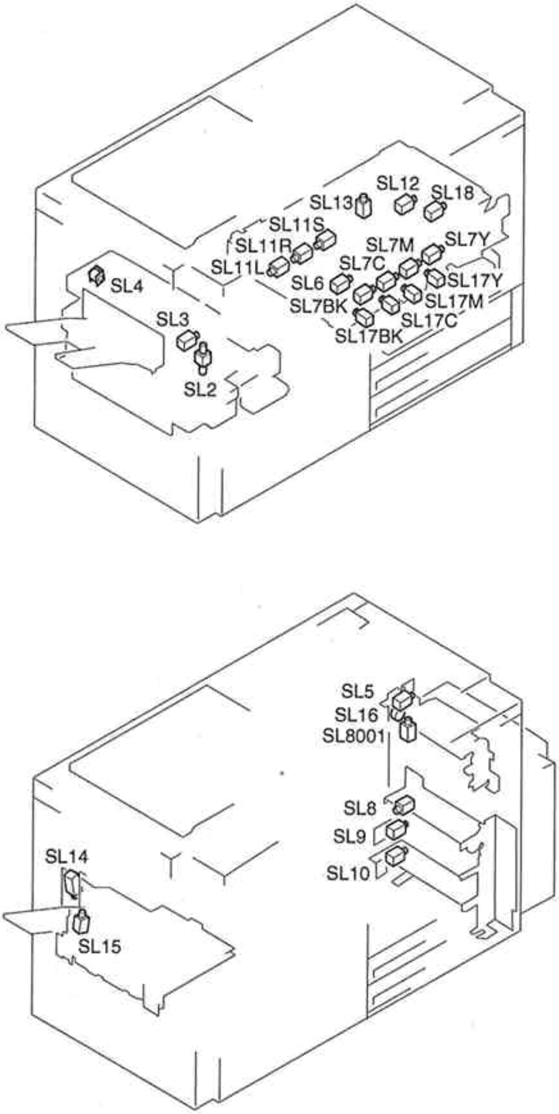
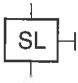

SL12
SL13
SL18
SL11S
SL11R
SL11L
SL7M
SL7Y
SL7C
SL6
SL17Y
SL7BK
SL17M
SL17C
SL17BK
SL4
SL3
SL2
SL5
SL16
SL8001
SL8
SL9
SL10
SL14
SL15

Figure 7-607

Symbol	Name	Notation	Function/name
	Solenoid	SL2	Fixing oil pump drive solenoid
		SL3	Upper fixing web take-up solenoid
		SL4	Upper fixing web releasing solenoid
		SL5	Multifeeder pick-up releasing solenoid
		SL6	Transfer cleaning blade solenoid
		SL7Y	Y transfer blade solenoid
		SL7M	M transfer blade solenoid
		SL7C	C transfer blade solenoid
		SL7BK	Bk transfer blade solenoid
		SL8	Duplexing unit pick-up roller releasing solenoid
		SL9	Cassette 1 pick-up roller releasing solenoid
		SL10	Cassette 2 pick-up roller releasing solenoid
		SL11S	Duplexing paper deflecting plate solenoid (S)
		SL11R	Duplexing paper deflecting plate solenoid (R)
		SL11L	Duplexing paper deflecting plate solenoid (L)
		SL12	Stopper plate solenoid
		SL13	Feeding roller solenoid
		SL14	Delivery paper deflecting plate solenoid
		SL15	Separation claw releasing solenoid
		SL16	Registration releasing solenoid
		SL17Y	Y SALT sensor shutter opening/closing solenoid
		SL17M	M SALT sensor shutter opening/closing solenoid
		SL17C	C SALT sensor shutter opening/closing solenoid
		SL17BK	Bk SALT sensor shutter opening/closing solenoid
		SL18	Polishing roller solenoid
		SL8001	Paper deck pick-up roller releasing solenoid

E. Fans

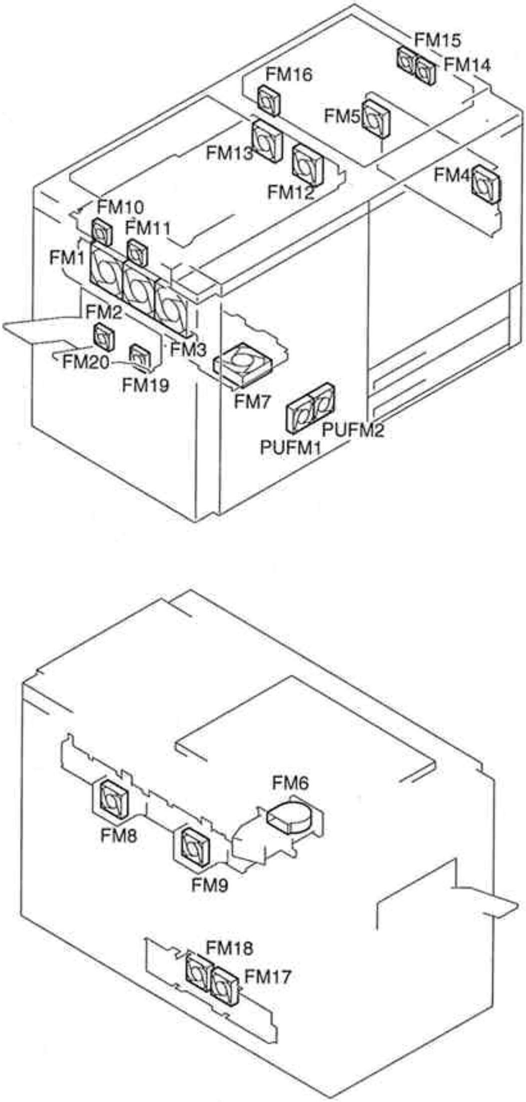

FM15
FM14
FM16
FM5
FM13
FM12
FM4
FM10
FM11
FM1
FM2
FM3
FM20
FM19
FM7
PUFM2
PUFM1
FM6
FM8
FM9
FM18
FM17

Figure 7-608

Symbol	Name	Notation	Function/name
	Fan	FM1	Delivery assembly cooling fan 1
		FM2	Delivery assembly cooling fan 2
		FM3	Delivery assembly cooling fan 3
		FM4	Laser cooling fan (front)
		FM5	Laser cooling fan (rear)
		FM6	Primary exhaust fan
		FM7	Pre-fixing feeding fan
		FM8	Primary suction fan (left)
		FM9	Primary suction fan (right)
		FM10	Scanner assembly cooling fan 1
		FM11	Scanner assembly cooling fan 2
		FM12	Scanner assembly cooling fan 3
		FM13	Scanner assembly cooling fan 4
		FM14	Digital unit cooling fan 1
		FM15	Digital unit cooling fan 2
		FM16	Digital unit cooling fan 3
		FM17	Power supply cooling fan 1
		FM18	Power supply cooling fan 2
		FM19	Delivery lower cooling fan 1
		FM20	Delivery lower cooling fan 2
		PUFM1	Power supply cooling fan 3
		PUFM2	Power supply cooling fan 4

F. Motors

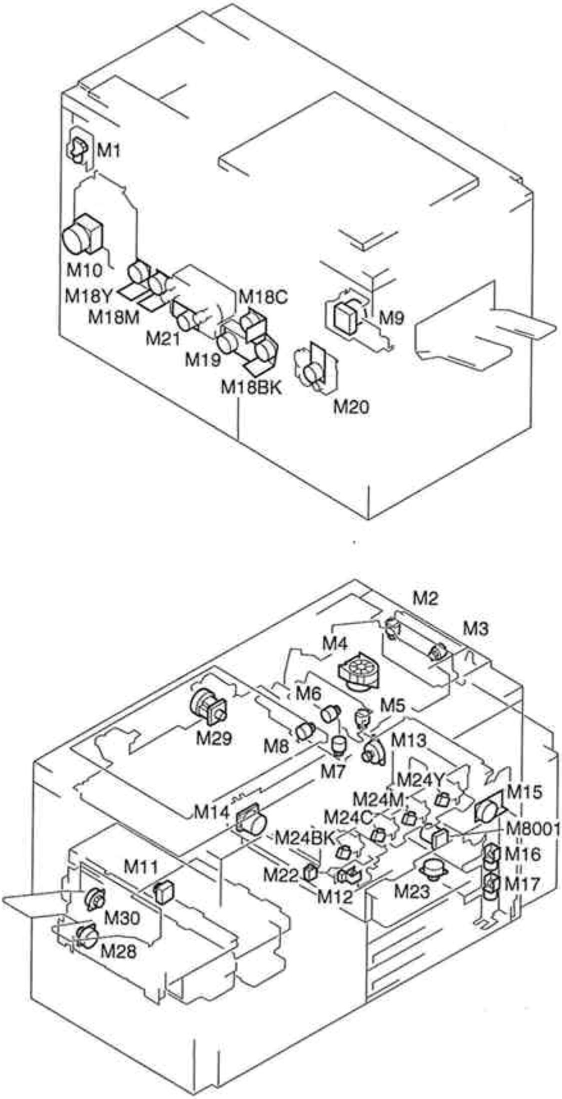

M1
M10
M18Y
M18M
M21
M19
M18C
M18BK
M9
M20
M2
M3
M4
M6
M5
M29
M8
M13
M7
M24Y
M24M
M15
M14
M24C
M8001
M24BK
M16
M11
M22
M17
M12
M23
M30
M28

Figure 7-609

Symbol	Name	Notation	Function/name
Ⓜ	Motor	M1	Multifeeder lifter motor
		M2	Y mirror slant correction motor
		M3	Y mirror ratio correction motor
		M4	Laser scanner motor
		M5	C mirror slant correction motor
		M6	C mirror ratio correction motor
		M7	Bk mirror slant correction motor
		M8	Bk mirror ratio correction motor
		M9	Fixing motor
		M10	Pick-up motor
		M11	Pre-fixing feeding motor
		M12	Transfer belt cleaning web motor
		M13	Transfer belt swinging motor
		M14	Transfer belt motor
		M15	Polishing/oil removing motor
		M16	Cassette 1 lifter motor
		M17	Cassette 2 lifter motor
		M18Y	Y developing motor
		M18M	M developing motor
		M18C	C developing motor
		M18BK	Bk developing motor
		M19	Duplexing feeding motor
		M20	Waste toner feeding motor
		M21	Photosensitive drum motor
		M22	Separation/pre-fixing wire cleaning motor
		M23	Duplexing unit stacking guide motor
		M24Y	Y primary wire cleaner motor
		M24M	M primary wire cleaner motor
		M24C	C primary wire cleaner motor
		M24BK	Bk primary wire cleaner motor
		M25	Shutter drive motor
		M28	Duplexing unit feeding motor
		M29	Scanner motor
		M30	Fixing web drive motor
		M8001	Paper deck motor

G. PCBs

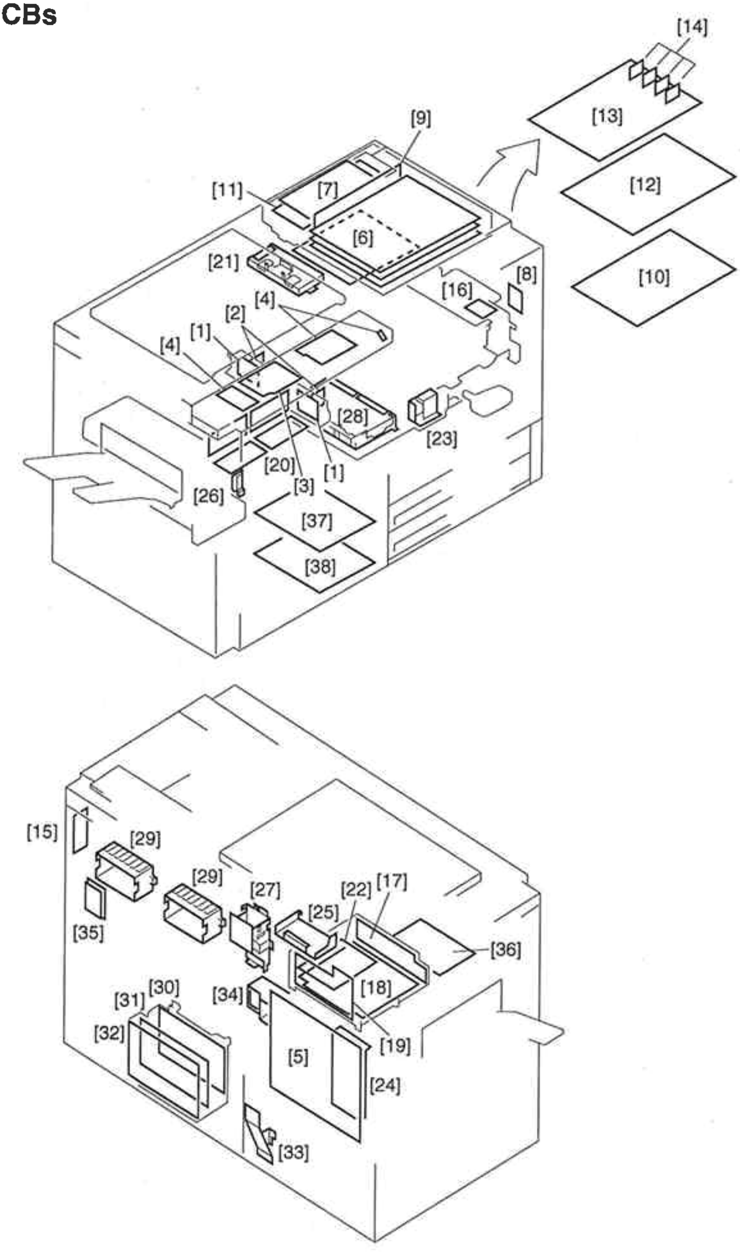

[14]
[13]
[9]
[12]
[11]
[7]
[6]
[21]
[8]
[16]
[10]
[4]
[2]
[1]
[4]
[28]
[23]
[20]
[1]
[3]
[26]
[37]
[38]
[15]
[29]
[29]
[27]
[22]
[17]
[25]
[35]
[36]
[31]
[30]
[34]
[18]
[32]
[19]
[5]
[24]
[33]

Figure 7-610

Ref.	Name	Function/name
[1]	Image position correction PCB	Corrects and controls image position.
[2]	Image position correction CCD PCB	Drives the CCD for image position correction.
[3]	Control panel PCB	Controls the control panel.
[4]	Control panel family PCB	Controls the control panel.
[5]	DC controller PCB	Controls the sequence of operations for the printer unit.
[6]	Video controller PCB	Controls video signals.
[7]	Reader unit controller PCB	Controls the sequence of operations for the reader unit.
[8]	Hopper relay PCB	Controls the toner sensor of the hopper assembly.
[9]	IP motherboard	Relays digital image signals.
[10]	Image processor PCB	Processes digital images.
[11]	IP-ECO PCB	Processes digital images.
[12]	ED board A1	Controls the editor.
[13]	IP memory PCB	Compresses and stores digital image data.
[14]	DRAM memory (option)	Stores image data from external devices.
[15]	Multifeeder relay PCB	Relays multifeeder control signals.
[16]	Environment measurement PCB	Measures the machine inside temperature humidity.
[17]	Interface motherboard PCB	Relays communication control signals for external devices.
[18]	Interface board B1/B2	Controls communication with external devices.
[19]	Tandem interface PCB (option)	Controls communication in a tandem configuration.
[20]	Potential measurement PCB	Measures the potential of the drum surface.
[21]	Analog processor PCB	Processes analog images.
[22]	Preview monitor board/monitor I/F PCB (option)	Controls the monitor.
[23]	Transfer belt motor driver PCB	Controls the transfer belt motor.
[24]	AC driver PCB	Controls AC loads.
[25]	Scanner motor driver PCB	Controls the scanner motor.
[26]	Oil level detection PCB	Detects the level of fixing oil.
[27]	Lamp regulator	Drives the scanning lamp.
[28]	HVT1	Controls the high voltage for the transfer/ internal static eliminating assembly.
[29]	HVT2	Controls the high voltage for the primary/pre-primary charging assembly.
[30]	HVT3-A (rear)	Controls the high voltage for the developing bias DC component (for Y, M).
[31]	HVT3-B	Controls the high voltage for the developing bias AC component/ to prevent stray toner.
[32]	HVT3-A (front)	Controls the high voltage for the developing bias DC component (for C, K).
[33]	HVT4	Controls the high voltage for the separation charging assembly.
[34]	HVT5	Controls the high voltage for the pre-fixing charging assembly.
[35]	Pick-up motor driver PCB	Pick-up motor control
[36]	DC power supply PCB 2	Supplies power supply at night
[37]	DC power supply PCB 1 (upper)	Supplies power to various loads.
[38]	DC power supply PCB 1 (lower)	Supplies power to various loads.

H. Variable Resistors (VR), Light-Emitting Diodes (LED), and Check Pins by PCB

Of the variable resistors (VR), light-emitting diodes (LED), and check pins used in the CLC1000, those that are needed when servicing the machine in the field are discussed.

---

1. Do not touch the VRs and check pins that are not mentioned herein; they are for factory use only and require special instruments and high precision for adjustment.
2. Some LEDs emit light because of leakage current; this is a normal condition and must be kept in mind.
3. VRs that may be used in the field ... ■

   VRs that must not be used in the field ... ▨

---

1. DC Controller PCB

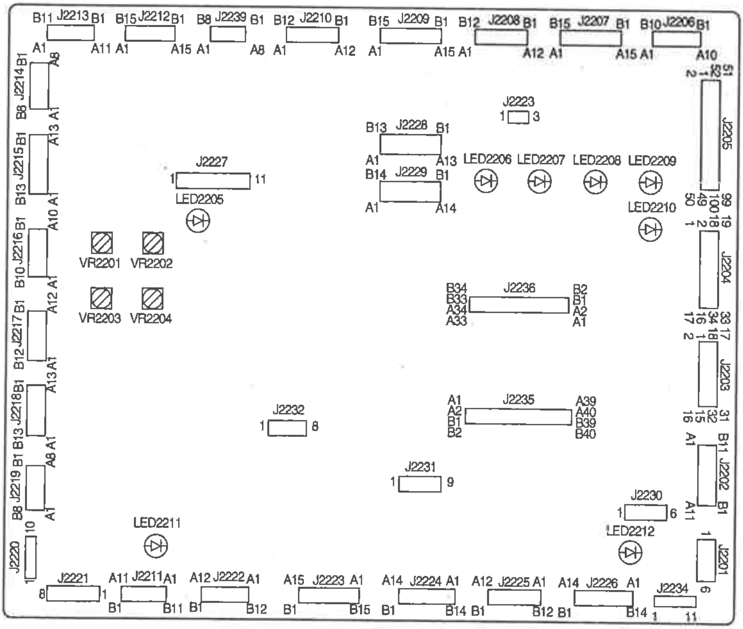
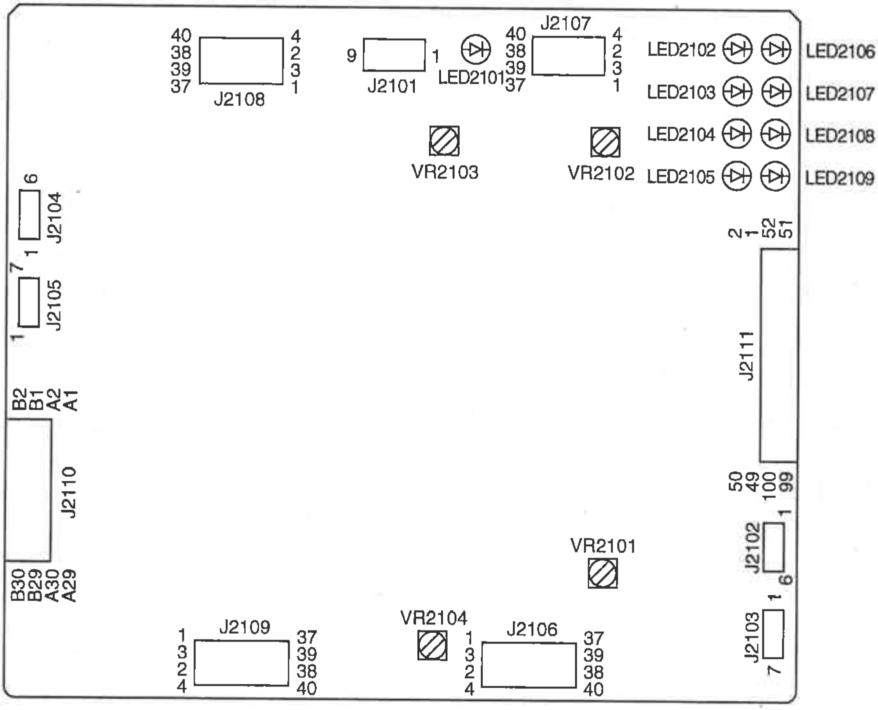

B11 J2213 B1
A1 A11
B15 J2212 B1
A1 A15
B8 J2239 B1
A1 A8
B12 J2210 B1
A1 A12
B15 J2209 B1
A1 A15
B12 J2208 B1
A1 A12
B15 J2207 B1
A1 A15
B10 J2206 B1
A1 A10
J2205
J2223
1 3
B13 J2228 B1
A1 A13
B14 J2229 B1
A1 A14
J2227
1 11
LED2205
LED2206 LED2207 LED2208 LED2209
LED2210
J2204
VR2201 VR2202
VR2203 VR2204
J2236
B34 B33 A34 A33
B2 B1 A2 A1
J2203
J2235
A1 A2 B1 B2
A39 A40 B39 B40
J2232
1 8
J2231
1 9
J2230
1 6
LED2211
LED2212
J2202
J2201
J2214
J2215
J2216
J2217
J2218
J2219
J2220
J2221
J2211
J2222
J2223
J2224
J2225
J2226
J2234

Figure 7-611

LED	Function
LED2205	ON in response to +24 VR.
LED2206	ON in response to the Y sub scanning enable signal.
LED2207	ON in response to the M sub scanning enable signal.
LED2208	ON in response to the C sub scanning enable signal.
LED2209	On in response to the Bk sub scanning enable signal.
LED2210	ON in response to the ITOP signal.
LED2211	ON in response to +24 VU.
LED2212	ON when 5 V power is present.

Table 7-601

2. Video Controller PCB



J2108
40
38
39
37
4
2
3
1
J2101
9
1
LED2101
J2107
40
38
39
37
4
2
3
1
LED2102
LED2103
LED2104
LED2105
LED2106
LED2107
LED2108
LED2109
VR2103
VR2102
J2104
6
1
J2105
7
1
J2110
B2
B1
A2
A1
B30
B29
A30
A29
J2111
2
1
52
51
50
49
100
99
J2102
1
6
J2103
1
7
VR2101
VR2104
J2109
1
3
2
4
37
39
38
40
J2106
1
3
2
4
37
39
38
40

Figure 7-612

LED	Function
LED2101	ON in response to +5 V.
LED2102	ON in response to Y-BD error.
LED2103	ON in response to M-BD error.
LED2104	ON in response to C-BD error.
LED2105	ON in response to Bk-BD error.
LED2106	ON in response to the Y sub scanning enable signal.
LED2107	ON in response to the M sub scanning enable signal.
LED2108	ON in response to the C sub scanning enable signal.
LED2109	ON in response to the Bk sub scanning enable signal.

Table 7-602

3. Reader Control PCB

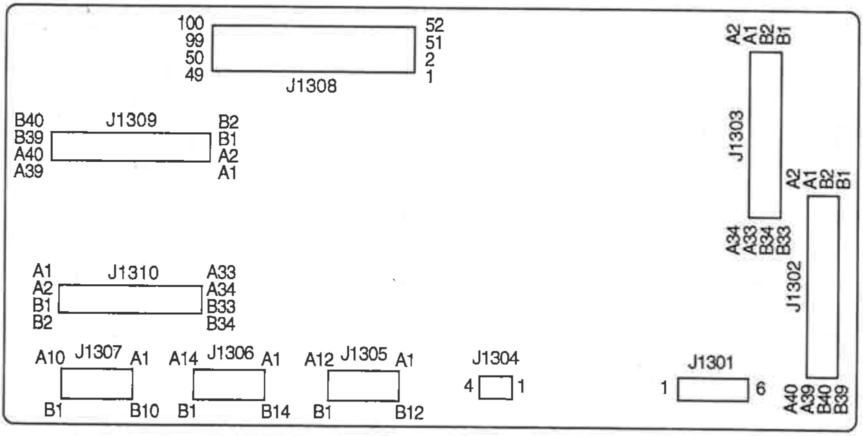

100
99
50
49
J1308
52
51
2
1
B40
B39
A40
A39
J1309
B2
B1
A2
A1
A1
A2
B1
B2
J1310
A33
A34
B33
B34
A10
J1307
A1
B1
B10
A14
J1306
A1
B1
B14
A12
J1305
A1
B1
B12
J1304
4
1
J1301
1
6
A2
A1
B2
B1
J1303
A34
A33
B34
B33
A2
A1
B2
B1
J1302
A40
A39
B40
B39

Figure 7-613

4. Image Processor PCB

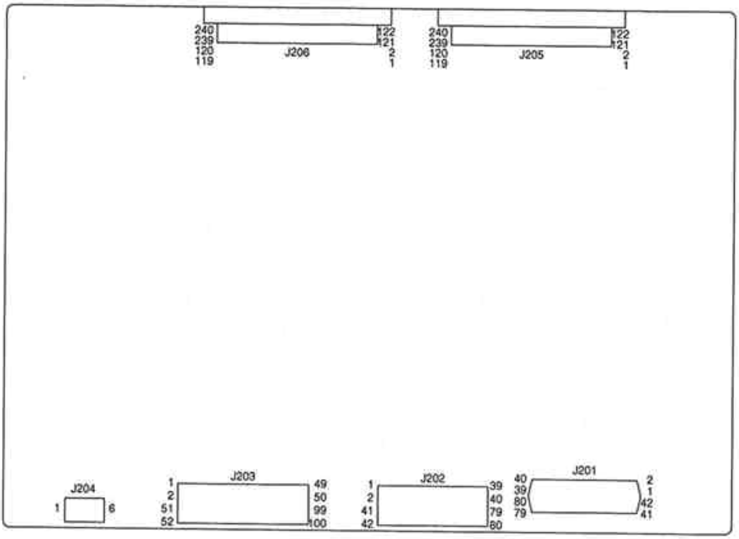

240
239
120
119
J206
122
121
2
1
240
239
120
119
J205
122
121
2
1
J204
1
6
1
2
51
52
J203
49
50
99
100
1
2
41
42
J202
39
40
79
80
40
39
80
79
J201
2
1
42
41

Figure 7-614

5. IP Memory PCB

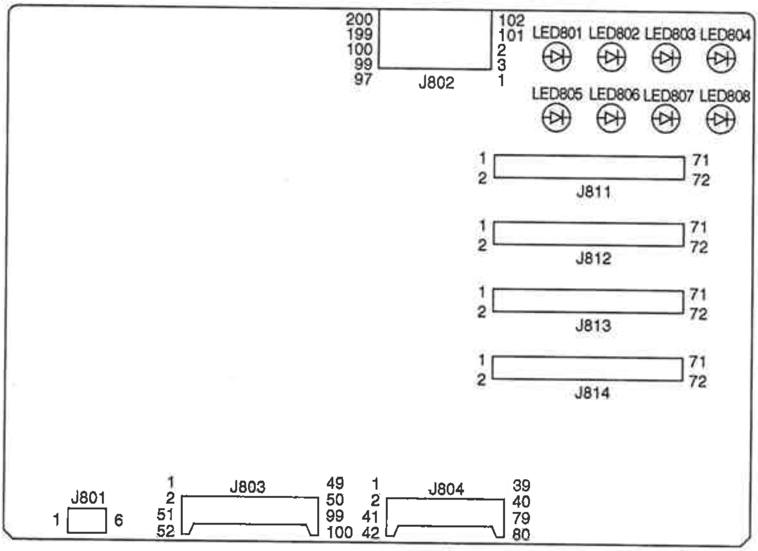

200
199
100
99
97
J802
102
101
2
3
1
LED801
LED802
LED803
LED804
LED805
LED806
LED807
LED808
1
2
J811
71
72
1
2
J812
71
72
1
2
J813
71
72
1
2
J814
71
72
J801
1
6
1
2
51
52
J803
49
50
99
100
1
2
41
42
J804
39
40
79
80

Figure 7-615

LED	Function
LED801	ON in response to the Bk sub scanning data read enable signal.
LED802	ON in response to the C sub scanning data read enable signal.
LED803	ON in response to the M sub scanning data read enable signal.
LED804	ON in response to the Y sub scanning data read enable signal.
LED805	ON in response to power-on.
LED806	ON in response to the sub scanning data write enable signal.
LED807	ON in response to the main scanning data read enable signal.
LED808	ON in response to the main scanning data write enable signal.

Table 7-603

6. Analog Processor PCB

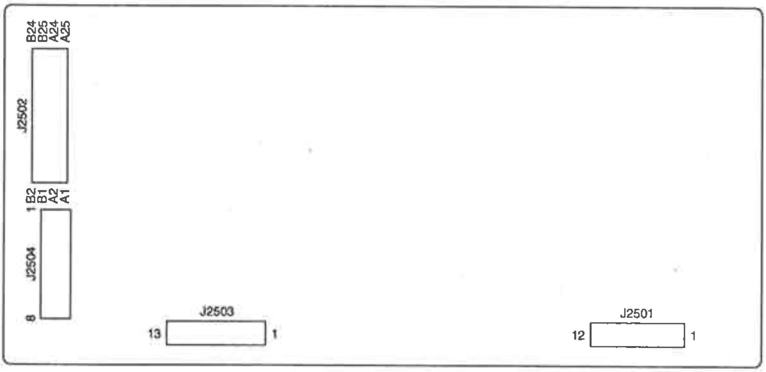


Figure 7-616

7. Transfer Belt Motor Driver PCB

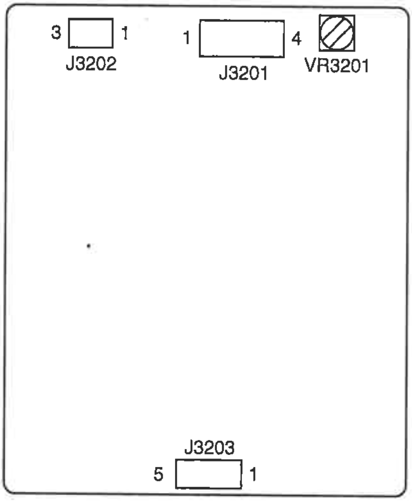

3
1
J3202
1
4
J3201
VR3201
J3203
5
1

Figure 7-617

8. AC Driver PCB

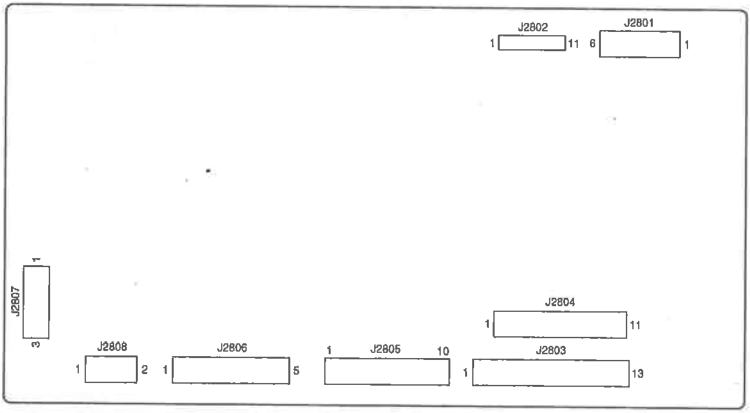

J2802
1
11
J2801
6
1
J2807
1
3
J2804
1
11
J2808
1
2
J2806
1
5
1
J2805
10
J2803
1
13

Figure 7-618

9. Scanner Motor Driver PCB

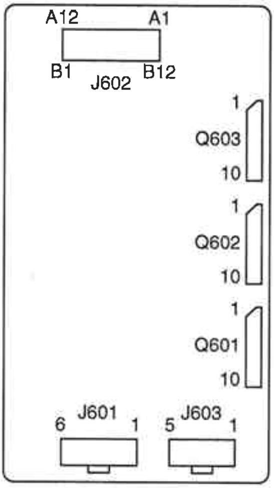

A12
A1
B1
J602
B12
1
Q603
10
1
Q602
10
1
Q601
10
6
J601
1
5
J603
1

Figure 7-619

10. Laser Driver PCB

For Y/M

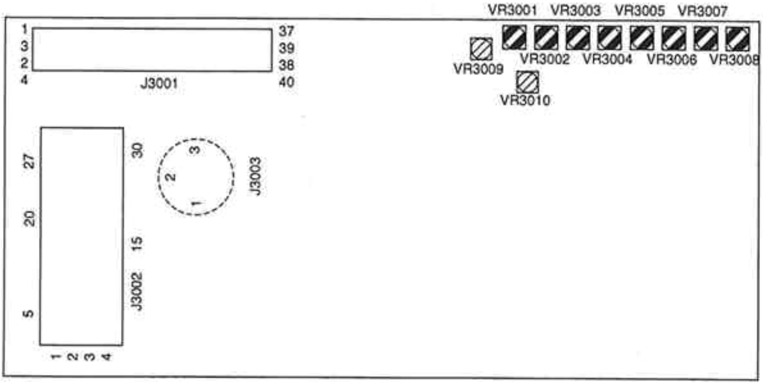

VR3001
VR3003
VR3005
VR3007
1
3
2
4
J3001
37
39
38
40
VR3009
VR3002
VR3004
VR3006
VR3008
VR3010
27
20
5
30
15
J3002
1
2
3
4
J3003

Figure 7-620

For C/Bk

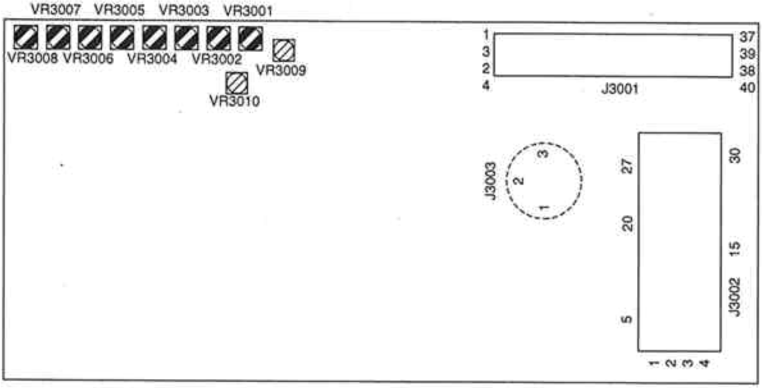

VR3007
VR3005
VR3003
VR3001
VR3008
VR3006
VR3004
VR3002
VR3009
VR3010
1
3
2
4
37
39
38
40
J3001
J3003
1
2
3
27
20
5
30
15
J3002
1
2
3
4

Figure 7-621

VR	Function
VR3001 VR3002	Use them when adjusting the laser power (when replacing the laser unit).
VR3003 VR3004 VR3005 VR3006 VR3007 VR3008	Use them when adjusting the laser power or the laser beam intensity (when replacing the laser unit).
VR3009 VR3010	For factory adjustment. (Do not touch.)

Table 7-604

11. IP-ECO PCB

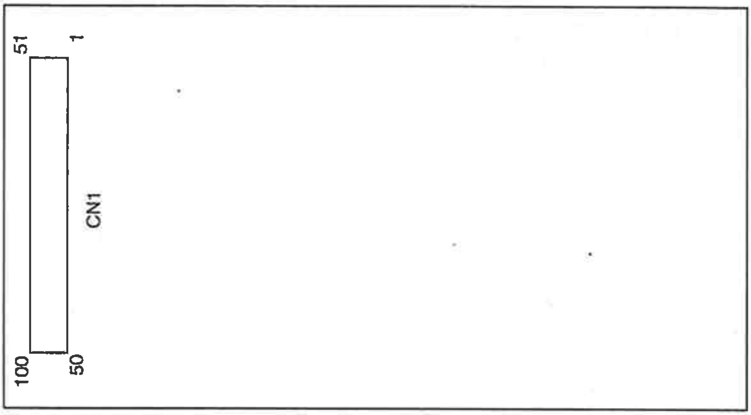

51
1
CN1
100
50

Figure 7-622

12. Lamp Regulator PCB

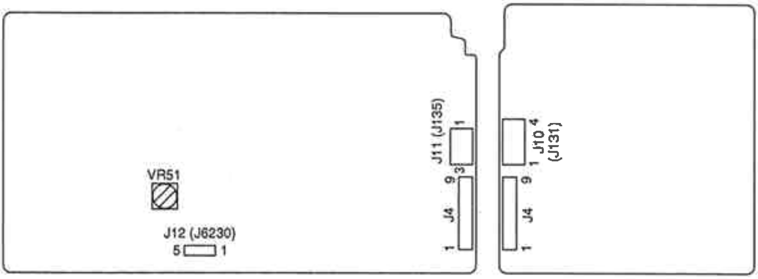

VR51
J12 (J6230)
5
1
J11 (J135)
1
3
9
J4
1
J10
4
1
(J131)
9
J4
1

Figure 7-623

13. Environment Sensor PCB

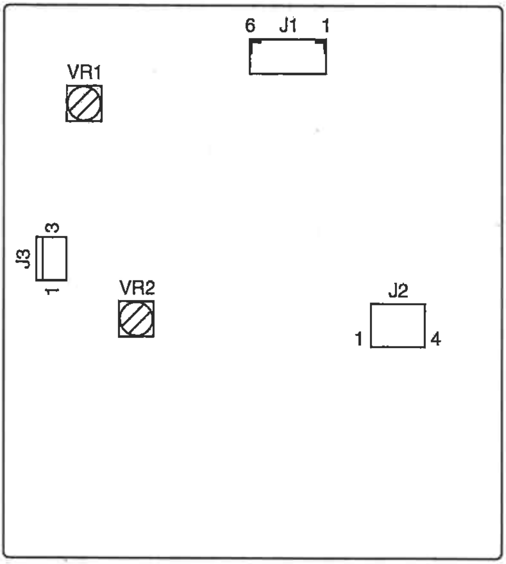

6 J1 1
VR1
3
J3
1
VR2
J2
1
4

Figure 7-624

14. HVT1

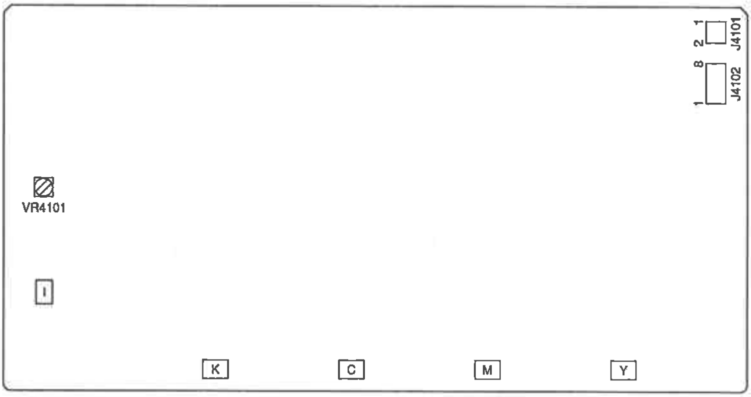

1
2
J4101
8
1
J4102
VR4101
I
K
C
M
Y

Figure 7-625

15. HVT2

HVT2-1

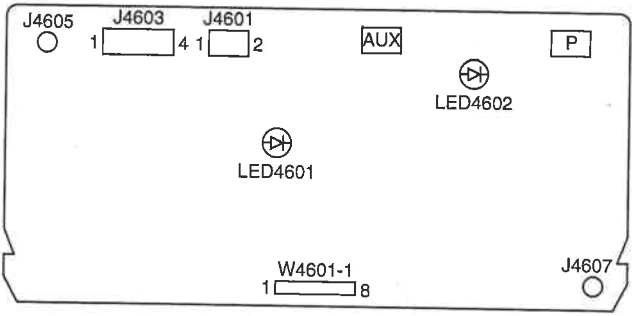

J4605
J4603
1
4
J4601
1
2
AUX
P
LED4602
LED4601
W4601-1
1
8
J4607

Figure 7-626

LED	Function
LED4601	(Y)/(C) ON in response to pre-primary charging output.
LED4602	(Y)/(C) ON in response to primary charging output.

Table 7-605

■ HVT2-2

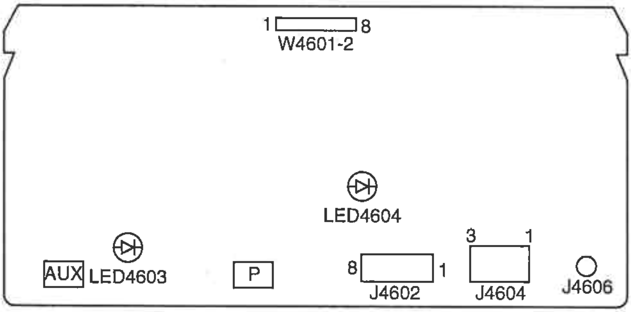

1
8
W4601-2
LED4604
3
1
AUX
LED4603
P
8
1
J4602
J4604
J4606

Figure 7-627

LED	Function
LED4603	(M)/(Bk) ON in response to pre-primary charging output.
LED4604	(M)/(Bk) ON in response to primary charging output.

Table 7-606

16. HVT3

HVT3-A

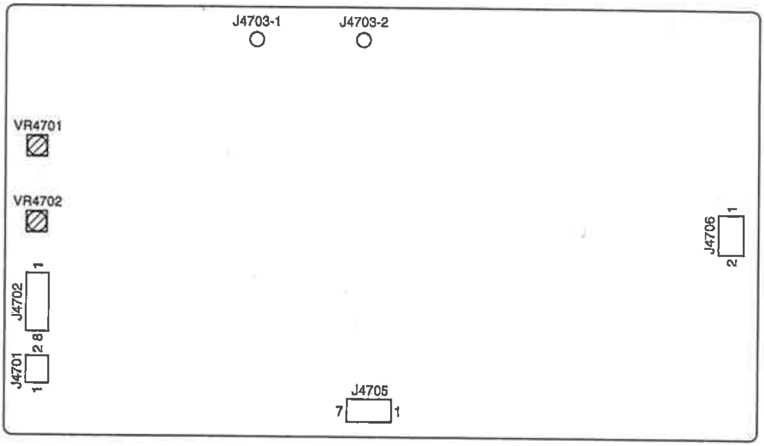

J4703-1
J4703-2
VR4701
VR4702
J4702
1
8
2
J4701
1
J4706
1
2
J4705
7
1

Figure 7-628

HVT3-B

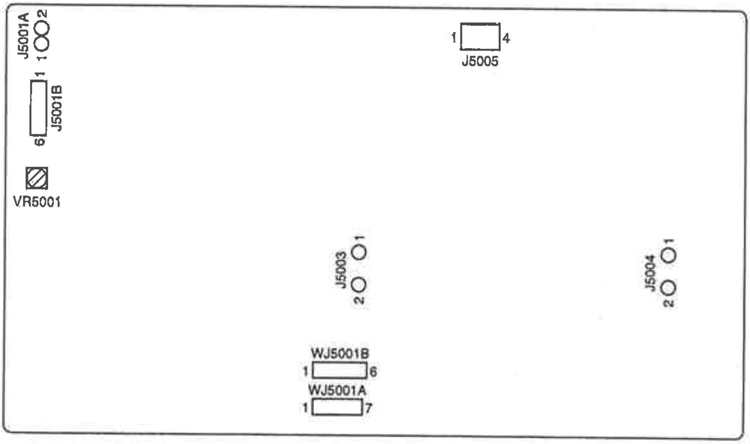

J5001A
2
1
1
6
J5001B
VR5001
J5005
1
4
J5003
1
2
J5004
1
2
WJ5001B
1
6
WJ5001A
1
7

Figure 7-629

17. HVT4

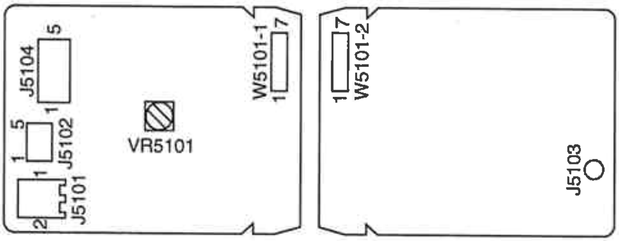

J5104
5
1
5
1
J5102
1
J5101
2
VR5101
W5101-1
7
1
7
1
W5101-2
J5103

Figure 7-630

18. HVT5

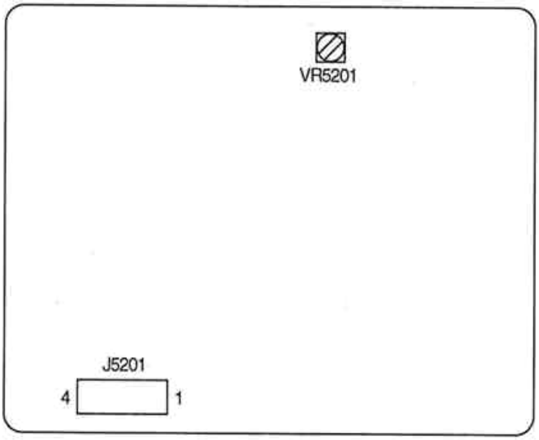

VR5201
J5201
4
1

Figure 7-631

19. ED board A1

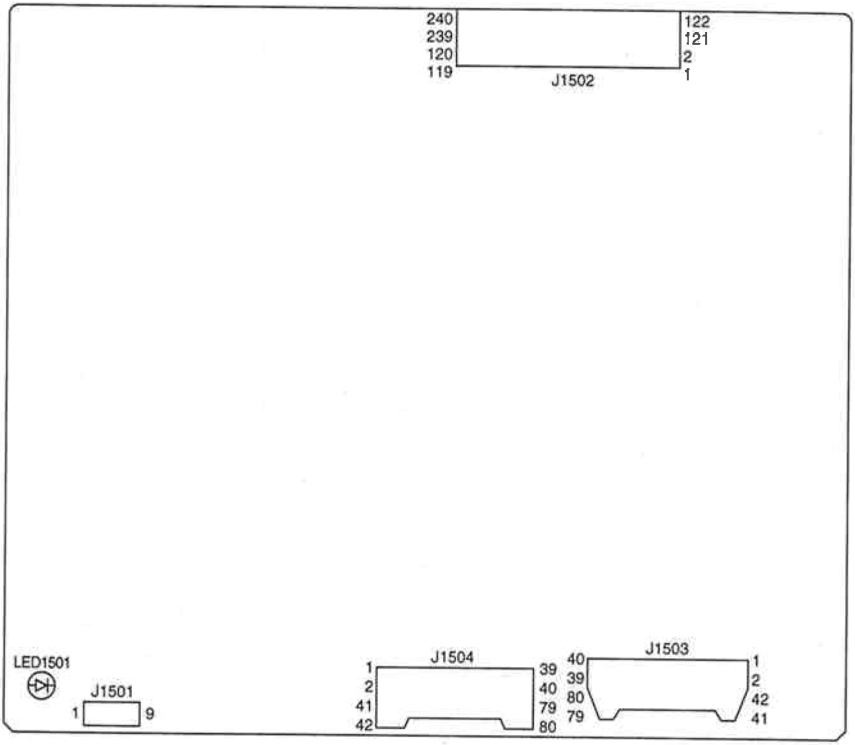

240
239
120
119
J1502
122
121
2
1
LED1501
J1501
1
9
J1504
1
2
41
42
39
40
79
80
J1503
40
39
80
79
1
2
42
41

Figure 7-632

LED	Function
LED1501	ON at power-on.

Table 7-607

20. Interface board B1

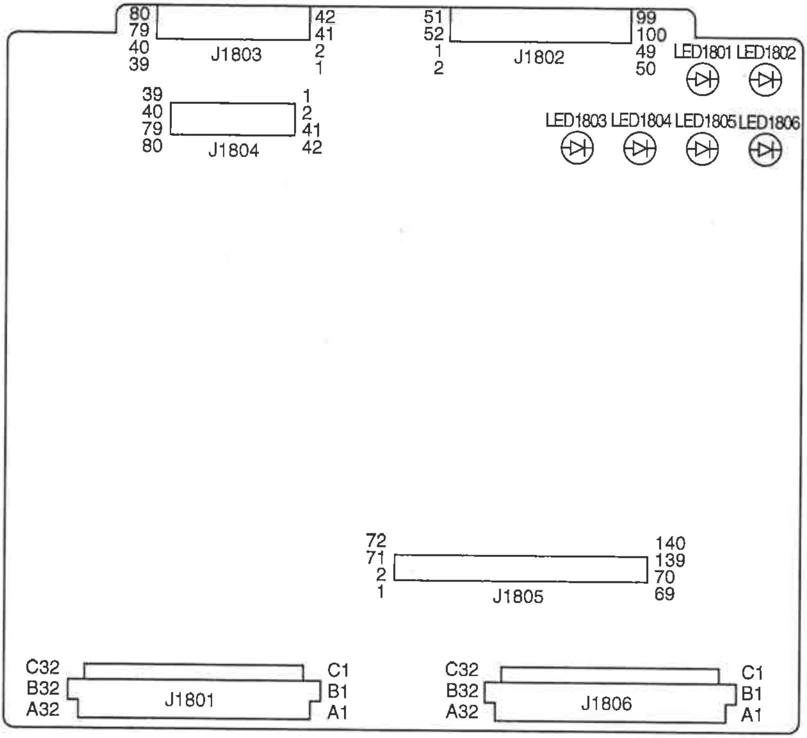

80
79
40
39
J1803
42
41
2
1
51
52
1
2
J1802
99
100
49
50
LED1801
LED1802
39
40
79
80
J1804
1
2
41
42
LED1803
LED1804
LED1805
LED1806
72
71
2
1
J1805
140
139
70
69
C32
B32
A32
J1801
C1
B1
A1
C32
B32
A32
J1806
C1
B1
A1

Figure 7-633

LED	Function
LED1801	ON in response to +5 V.
LED1802	ON in response to the image data write enable signal (to the IPU, etc.).
LED1803	ON in response to the Bk image data read enable signal (from the IPU, etc.).
LED1804	ON in response to the C image data read enable signal (from the IPU, etc.).
LED1805	ON in response to the M image data read enable signal (from the IPU, etc.).
LED1806	ON in response to the Y image data read enable signal (from the IPU, etc.).

Table 7-608

21. Preview monitor board

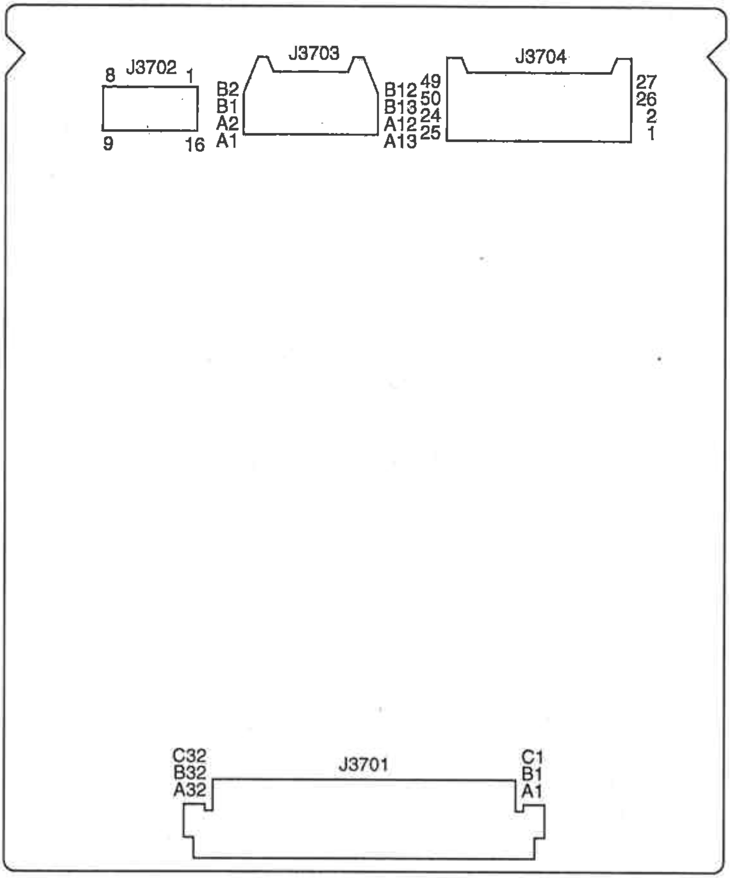

J3702
8
1
9
16
J3703
B2
B1
A2
A1
B12
B13
A12
A13
J3704
49
50
24
25
27
26
2
1
J3701
C32
B32
A32
C1
B1
A1

Figure 7-634

VII. SERVICE MODE

A. Outline

The CLC1000's service mode is divided into the following six:

No.	Notation	Description
1	DISP	Control display mode
2	ADJUST	Adjustment mode
3	FUNC	Function/inspection mode
4	OPTION	Options mode
5	TEST	Test print mode
6	COUNTER	Counter mode

Table 7-701

1. Starting and Selecting Service Mode

- You cannot start service mode while the CLC1000 is making copies.

1) Press the ✱ key on the control panel.
2) Press the 2 and 8 keys (keypad) at the same time.
3) Press the ✱ key.

- The screen shown in Figure 7-701 appears.

2. Ending Service Mode

Press the Reset key.

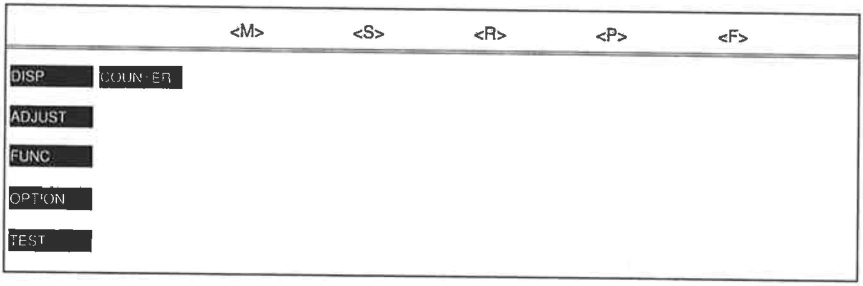


Figure 7-701

3. RAM Backup

Figure 7-702 shows the label attached to the inside of the cover of the service document compartment found on the front cover (left).

Each machine is adjusted at the factory, and the adjustment values are recorded on the label.

Be sure to record any new values on the label if you executed service mode and changed values after replacing a part. (See "After Replacing the Major Parts" in this chapter.)

A						
		TYP				
FUNC DC-CON	UP-A4R	447				
	UP-STMR	62				
	LOW-A4R	429				
	LOW-STMR	41				
	MF-A4R	516				
	MF-A6R	51				
	MF-A4	889				
	SGNL-Y	804				
	SGNL-M	798				
	SGNL-C	803				
	REF-Y	819				
	REF-M	818				
	REF-C	818				
	SIGG-Y	181				
	SIGG-M	194				
	SIGG-C	157				
	SGNL-S-Y	687				
	SGNL-S-M	746				
	SGNL-S-C	756				
	SGNL-S-K	318				
	REF-S-Y	514				
	REF-S-M	515				
	REF-S-C	515				
	REF-S-K	513				
	SGNL-D-Y	599				
	SGNL-D-M	600				
	SGNL-D-C	599				
	SGNL-D-K	499				
	SIGG-S-Y	132				
	SIGG-S-M	133				
	SIGG-S-C	137				
	SIGG-S-K	111				
	PT-OFST-K	-2				
	PUDT-U	184				
	PUDT-L	102				
	P-TH-1	3199				
	P-TH-2	2408				
	SNSR-RNK	E				
ADJUST PASCAL	P-OFST-Y	10				
	P-OFST-M	6				
	P-OFST-C	2				
	P-OFST-K	4				
FUNC IMG -REG	Y-REG-H	136				
	Y-REG-V	124				
	C-REG-H	140				
	C-REG-V	130				
	K-REG-H	145				
	K-REG-V	127				
ADJUST FEED -ADJ	UP-ADJ	115				
	LOW-ADJ	112				
	MULT-ADJ	128				
	DECK-ADJ	128				
	REFE-ADJ	128				
	VSYC-ADJ	180				
	MRGN-L	32				
	MRGN-R	32				
	MRGN-T	40				
	MRGN-B	40				
FUNC FUSER	UPPER-CR	0				
	LOWER-CR	0				
BODY No.	#83					

B						
		TYP				
ADJUST ADJ-XY	ADJ-X					
	ADJ-Y					
	ADJ-S					
	ADJ-J					
ADJUST DOC-REC	DA-XS					
	DA-XE					
	DA-YS					
	DA-YE					
	DS-DOC					
	DS-PRJ					
	DS-OHP					

C						

TR-BELT LOT NO.	SERIAL NO.

FB3-7172

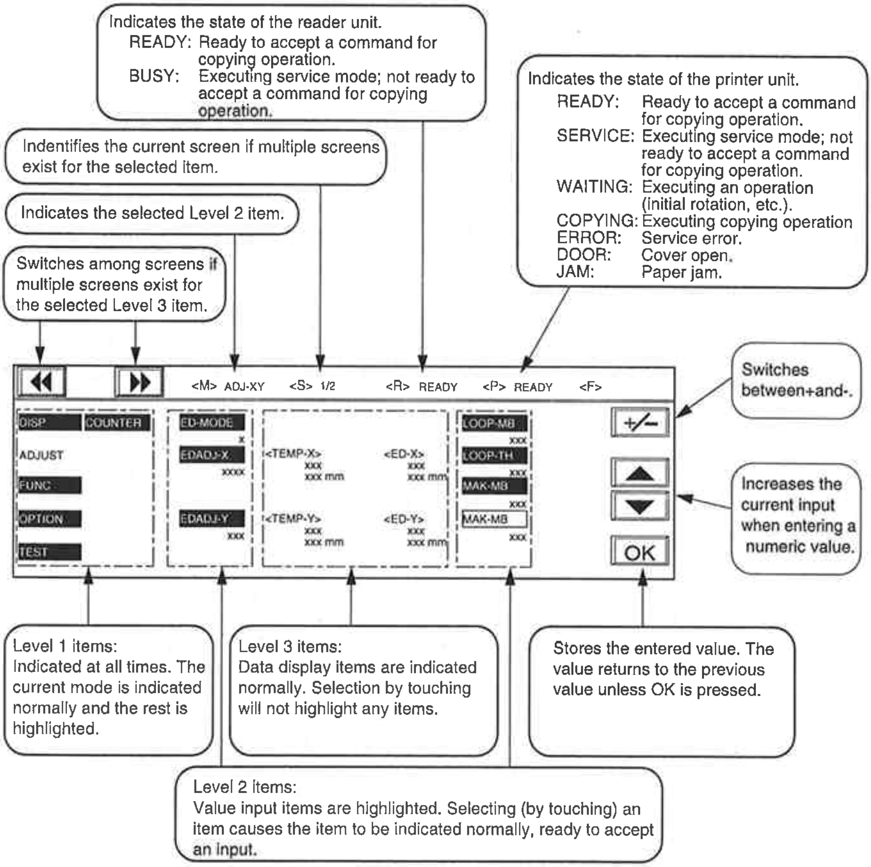
Figure 7-702

4. Basic Operations

Selecting Items

- Items may be Level 1, Level 2, or Level 3. The Level 1 items remain on the screen throughout service mode.
- To select an item, press the highlighted notation on the touch panel.

- Display (e.g., ADJUST>ADJ-XY>MRK-MB)



Indicates the state of the reader unit.
READY: Ready to accept a command for copying operation.
BUSY: Executing service mode; not ready to accept a command for copying operation.

Indentifies the current screen if multiple screens exist for the selected item.

Indicates the selected Level 2 item.

Switches among screens if multiple screens exist for the selected Level 3 item.

Indicates the state of the printer unit.
READY: Ready to accept a command for copying operation.
SERVICE: Executing service mode; not ready to accept a command for copying operation.
WAITING: Executing an operation (initial rotation, etc.).
COPYING: Executing copying operation
ERROR: Service error.
DOOR: Cover open.
JAM: Paper jam.

Switches between+and-.

Increases the current input when entering a numeric value.

Level 1 items: Indicated at all times. The current mode is indicated normally and the rest is highlighted.

Level 3 items: Data display items are indicated normally. Selection by touching will not highlight any items.

Stores the entered value. The value returns to the previous value unless OK is pressed.

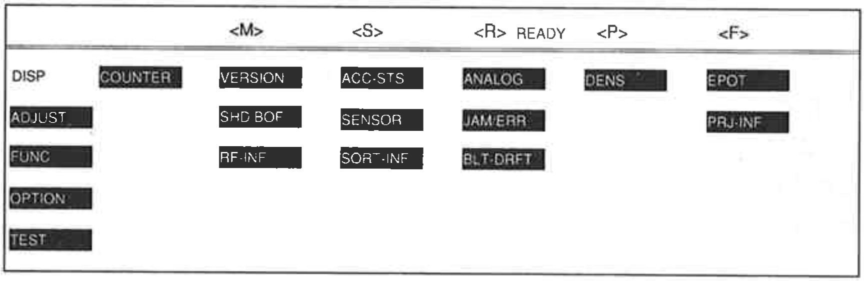
Level 2 items: Value input items are highlighted. Selecting (by touching) an item causes the item to be indicated normally, ready to accept an input.

Figure 7-703

- Keys on the Control Panel

0 to 9	Press an appropriate number (0 through 9) when entering a value.
Reset	Press it to end service mode (not valid for LCD-CHECK or KEY-CHECK).
Clear	Press it to return any input to 0.
Stop	Press it to stop various operations.
Start	Press it to start copying operation.

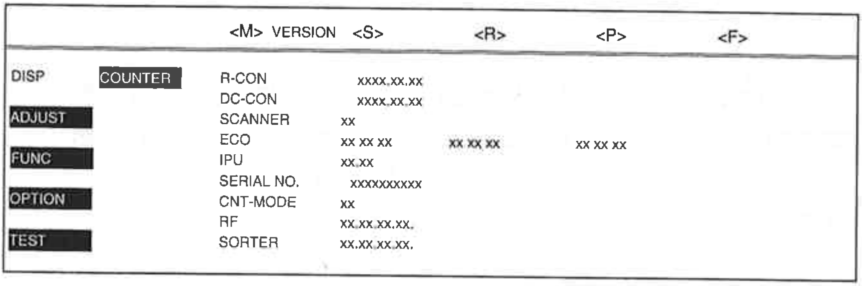
B. Control Display Mode (DISPLAY)


<M>
<S>
<R> READY
<P>
<F>
DISP
COUNTER
VERSION
ACC-STS
ANALOG
DENS
EPOT
ADJUST
SHD BOF
SENSOR
JAM/ERR
PRJ-INF
FUNC
RF-INF
SORT-INF
BLT-DRFT
OPTION
TEST

1	VERSION	Indicates the version of the ROM.
2	ACC-STS	Indicates the status of the option.
3	ANALOG	Indicates the measurement taken by the analog sensor.
4	DENS	Indicates the density of the developer.
5	EPOT	Indicates the photosensitive drum surface potential control data.
6	SHD/BOF	Indicates the shading/black offset data.
7	SENSOR	Indicates the sensor/DC controller input port.
8	JAM/ERR	Indicates the presence of a jam/E code.
9	PRJ-INF (Note 1)	Indicates the condition of the projector.
10	BLT-DRFT	Indicates the transfer belt swing data.
11	RF-INF (Note 1)	Indicates the state of the RDF.
12	SORT-INF (Note 1)	Indicates the state of the sorter.

Note 1:
Only if connected.

1. Version (ROM version)

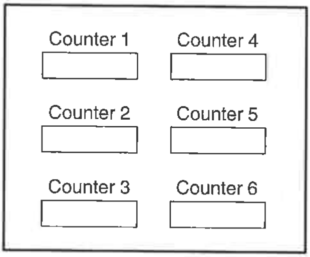


```
                        <M> VERSION  <S>          <R>          <P>          <F>
DISP        COUNTER     R-CON          xxxx.xx.xx
ADJUST                  DC-CON         xxxx.xx.xx
                        SCANNER      xx
FUNC                    ECO          xx xx xx     xx xx xx     xx xx xx
                        IPU          xx.xx
OPTION                  SERIAL NO.     xxxxxxxxxx
                        CNT-MODE     xx
TEST                    RF           xx.xx.xx.xx.
                        SORTER       xx.xx.xx.xx.
```

Item	Description	Remarks
R-CON	Indicates the version of the ROM on the reader controller PCB.	XXXX.XX.XX R&D control No. ROM version No. Language number (See the table that follows.)
DC-CON	Indicates the version of the ROM on the DC controller PCB.	
SCANNER	Indicates the version of the ROM on the original scanner motor driver PCB.	
ECO	Indicates the version of the ROM on the IP-ECO PCB.	
IPU	Indicates the version of the ROM of the IPU.	
SERIAL No.	Indicates the serial number.	For factory.
CNT-MODE	Indicates the type of count control of the copy counter. (See the table that follows.)	
RF	Indicates the version of the ROM on the RDF controller PCB.	
SORTER	Indicates the version of the ROM on the sorter controller PCB.	XXXX.XX.XX R&D number ROM version Not used

- Details of CNT-MODE

Display	Counter 1	Counter 2	Counter 3	Counter 4	Counter 5	Counter 6
7	Total counter	Full color copy counter	Retention counter	Bk print + Bk copy counter	Full color print counter	Two-sided copy counter
5	Total counter	Full color copy counter (large size)	Full color print counter (large size)	Bk print + Bk copy counter	Full color copy (small size)	Full color print (small size)
3	Total counter	Full color print + full color copy counter (large size)	Bk print + Bk copy counter (large size)	Small size total counter	Full color print + full color copy (small size)	Bk print + Bk copy counter (small size)
4	Total copy counter	Full color copy counter (large size)	Total print counter	Bk print + Bk copy counter	Full color copy counter (small size)	Mono color counter

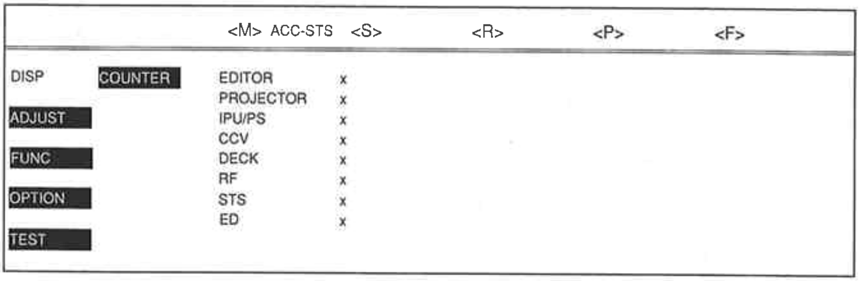


Counter control type	Product notation
7	F13-1611(JPN)
5	F13-1631(USA)/1641(EUR)/1651(UK) F13-1661(AUS)/F13-1681(DTL) F13-1691(AMS)
3	F13-1671(FRN)
4	not used

- Details of Language Number (R-CON/DC-CON)

	1st digit	2nd digit	3rd digit	4th digit
DC controller PCB	0	0	0	0
Reader unit controller PCB	0	1	1: Japanese 2: English 3: French 4: German 5: Danish 6: Dutch 7: Finnish 8: Italian 9: Norwegian A: Portuguese B: Spanish C: Swedish	0: AB 1: INCH 2: A 3: All sizes

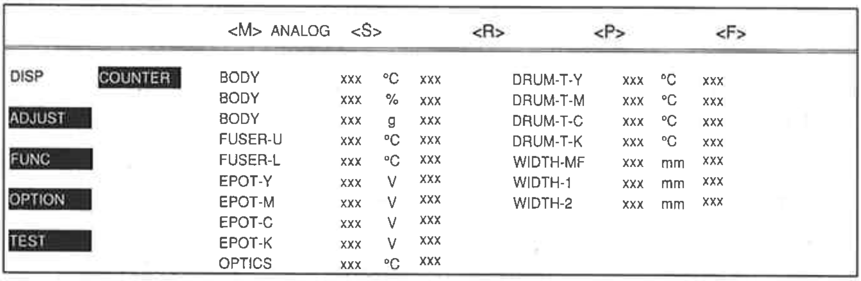
2. ACC-STS (status of option)



```
                    <M> ACC-STS   <S>          <R>          <P>          <F>

DISP       COUNTER    EDITOR      x
                      PROJECTOR   x
ADJUST                IPU/PS      x
                      CCV         x
FUNC                  DECK        x
                      RF          x
OPTION                STS         x
                      ED          x
TEST
```

<table>
<tr><th>Item</th><th>Description</th></tr>
<tr><td>EDITOR</td><td>Indicates the state (connection) of the editor.
EDITOR= 0: Editor absent.
1: Editor present.</td></tr>
<tr><td>PROJECTOR</td><td>Indicates the status (connection) of the projector.
<table>
<tr><th></th><th>Projector</th><th>Power supply for projector</th></tr>
<tr><td>PROJECTOR=0</td><td>Absent</td><td>Absent</td></tr>
<tr><td>1</td><td>Absent</td><td>Present</td></tr>
<tr><td>2</td><td>Present</td><td>Absent</td></tr>
<tr><td>3</td><td>Present</td><td>Present</td></tr>
</table></td></tr>
<tr><td>IPU/PS</td><td>Indicates the status of the IPU2/PS-IPU.
IPU/PS 0: I/F board absent.
1: Only I/F board present.
2: PS-IPU present.
3: PS-IPU extension board present.
4: IPU present.
5: PS-IPU, IPU, and extension board present.</td></tr>
<tr><td>CCV</td><td>Indicates the status (connection) of the Control Card V.
CCV= 0: CCV absent.
1: CCV present.</td></tr>
<tr><td>DECK</td><td>Indicates the status (connection) of the paper deck.
DECK= 0: Paper deck absent.
1: Paper deck absent.</td></tr>
<tr><td>RF</td><td>Indicates connection of the RDF.
RDF= 0: RDF absent.
1: RDF present.</td></tr>
<tr><td>STS</td><td>Indicates the status (connection) of the STS.
STS= 0: STS absent.
1: STS present.</td></tr>
<tr><td>ED</td><td>Indicates the status (connection) of the ED board.
ED= 0: ED absent.
1: ED present.</td></tr>
</table>

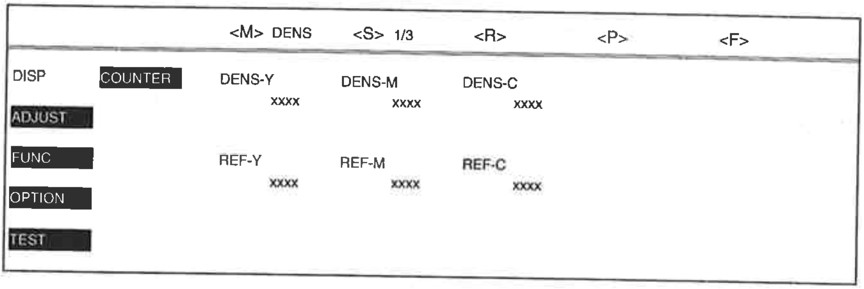
3. ANALOG (measurement by analog sensor)



```
                 <M> ANALOG  <S>          <R>           <P>           <F>

DISP   COUNTER   BODY      xxx  °C  xxx        DRUM-T-Y   xxx  °C  xxx
                 BODY      xxx  %   xxx        DRUM-T-M   xxx  °C  xxx
ADJUST           BODY      xxx  g   xxx        DRUM-T-C   xxx  °C  xxx
                 FUSER-U   xxx  °C  xxx        DRUM-T-K   xxx  °C  xxx
FUNC             FUSER-L   xxx  °C  xxx        WIDTH-MF   xxx  mm  xxx
                 EPOT-Y    xxx  V   xxx        WIDTH-1    xxx  mm  xxx
OPTION           EPOT-M    xxx  V   xxx        WIDTH-2    xxx  mm  xxx
                 EPOT-C    xxx  V   xxx
TEST             EPOT-K    xxx  V   xxx
                 OPTICS    xxx  °C  xxx
```

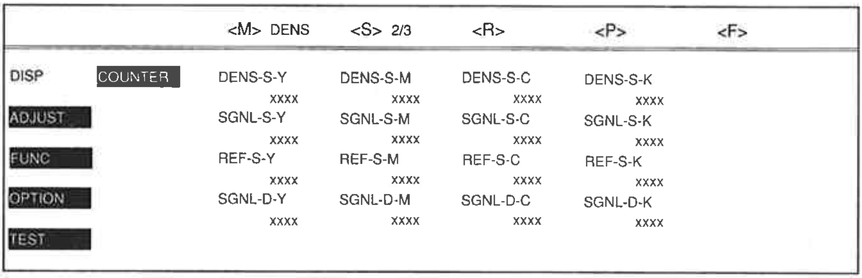
Item	Description
BODY(°C)	Indicates the machine inside temperature measured by the environment sensor. BODY XXX°C XXX Environment sensor output value (0 to 1023) Environment sensor output conversion value (°C)
BODY(%)	Indicates the machine inside humidity measured by the environment sensor. BODY XXX% XXX Environment sensor output value (0 to 1023) Environment sensor output conversion value (%)
BODY(g)	Indicates the machine internal absolute humidity (g) obtained from the measurements collected by the environment sensor. BODY XXXg XXX Computed value Converted value
FUSER-U	Indicates the upper fixing roller temperature (output of thermistor THM1). FUSER-U XXX°C XXX THM1 output value (0 to 1023) THM1 output conversion value (°C)
FUSER-L	Indicates the lower fixing roller temperature (output of thermistor THM2). FUSER-L XXX°C XXX THM2 output value (0 to 1023) THM2 output conversion value (°C)
EPOT-Y/M/C/K	Indicates the drum surface potential measured by the potential sensor. EPOT XXX V XXX Potential sensor output value (0 to 1023) Potential sensor output conversion value (V)
OPTICS	Indicates the temperature of the laser scanner assembly (thermistor THM3).
DRUM-T/M/C/K	Indicates the drum heater temperature (thermistor THM4/5/6/7). DRUM-T-Y XXX°C XXX THM4 output value (0 to 1023) THM4 output conversion value (°C)
WIDTH-MF/1/2	Indicates the paper width conversion value (mm) of the multifeeder, paper deck, and each cassette. WIDTH XXX mm XXX Output value (0 to 1023) of MFSVR/SVR1/SVR2 Output converted value (mm)

4. DENS (developer density)



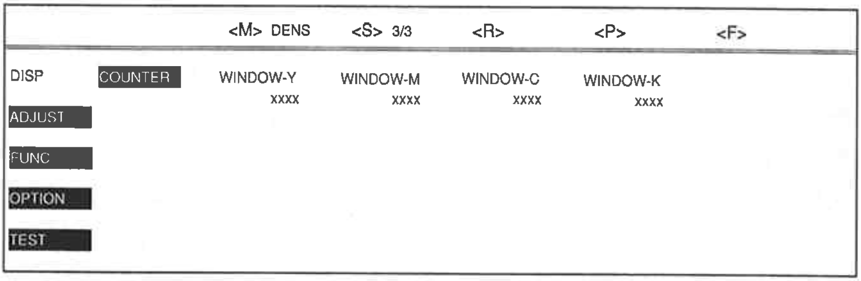
```
                    <M> DENS     <S> 1/3      <R>          <P>          <F>
DISP     COUNTER    DENS-Y       DENS-M       DENS-C
                         xxxx         xxxx         xxxx
ADJUST

FUNC                REF-Y        REF-M        REF-C
                         xxxx         xxxx         xxxx
OPTION

TEST
```

Item	Description	Remarks
DENS-Y/M/C	Indicates the discrepancy of the density of the developer on the developing cylinder (each color) in reference to the target value in %. +: Darker than target value. –: Lighter than target value. The value is the result of computations based on SGNL and REF stored under ATR-INIT and SGNL and REF on the screen.	Unit = 0.1% Normal if between - 20 and + 20.
REF-Y/M/C	Indicates the measurement (AD conversion) of the reference signal (each color). Measurements are taken for each copy run.	Normal if between 377 and 848.



```
                    <M> DENS    <S> 2/3     <R>         <P>         <F>

DISP     COUNTER    DENS-S-Y    DENS-S-M    DENS-S-C    DENS-S-K
                        xxxx        xxxx        xxxx        xxxx
ADJUST              SGNL-S-Y    SGNL-S-M    SGNL-S-C    SGNL-S-K
                        xxxx        xxxx        xxxx        xxxx
FUNC                REF-S-Y     REF-S-M     REF-S-C     REF-S-K
                        xxxx        xxxx        xxxx        xxxx
OPTION              SGNL-D-Y    SGNL-D-M    SGNL-D-C    SGNL-D-K
                        xxxx        xxxx        xxxx        xxxx
TEST
```

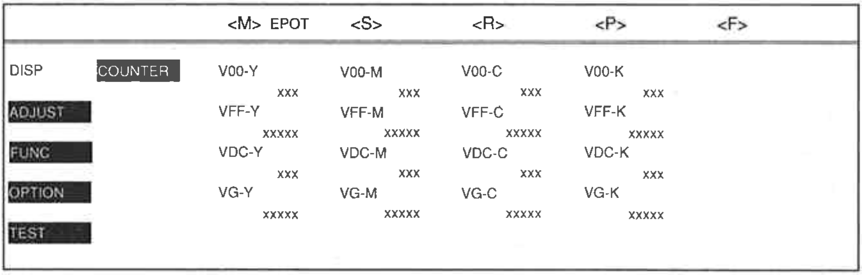
Item	Description	Remarks
DENS-S-Y/M/C/K	Indicates the discrepancy of the density of the pattern on the drum (each color) in reference to the target value in %.	unit = 0.1% Normal if between - 40 and +40.
SGNL-S-Y/M/C/K	Indicates the measurement (AD conversion value) of the density of the toner on the drum (each color). Measurements are taken for each copying run.	For Y, M, and C, normal if between 640 and 850 (YMC). For K, normal if between 192 and 389.
REF-S-Y/M/C/K	Indicates the measurement (AD conversion value) of the SALT reference signal (each color). Measurements are taken for each copying run.	For all colors, normal if between 464 and 544.
SGNL-D-Y/M/C/K	Indicates the measurement of the light reflected by the photosensitive drum.	For Y, M, and C, normal if between 380 and 900. For K, normal if between 300 and 720.



```
                         <M> DENS    <S> 3/3     <R>         <P>         <F>
DISP     COUNTER     WINDOW-Y    WINDOW-M    WINDOW-C    WINDOW-K
                         xxxx        xxxx        xxxx        xxxx
ADJUST

FUNC

OPTION

TEST
```

Item	Description	Remarks
WINDOW	Indicates the window soiling correction coefficient. The value decreases when the SALT sensor becomes soiled.	Normal if between 60 and 140.

5. EPOT (photosensitive drum surface potential control data)

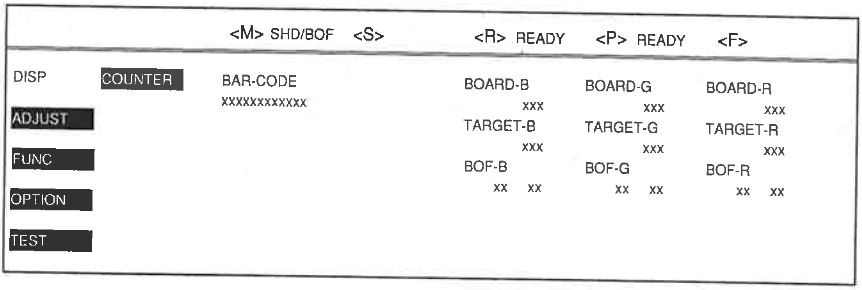


```
                        <M> EPOT     <S>          <R>          <P>          <F>

DISP        COUNTER     V00-Y        V00-M        V00-C        V00-K
                             xxx          xxx          xxx          xxx
ADJUST                  VFF-Y        VFF-M        VFF-C        VFF-K
                           xxxxx        xxxxx        xxxxx        xxxxx
FUNC                    VDC-Y        VDC-M        VDC-C        VDC-K
                             xxx          xxx          xxx          xxx
OPTION                  VG-Y         VG-M         VG-C         VG-K
                           xxxxx        xxxxx        xxxxx        xxxxx
TEST
```

Item	Description	Remarks
VOO=Y/M/C/K	Indicates the target value for VD (with laser output at 00). Indicates the optimum value computed by potential control.	Unit = V Optimum value: 350 to 800
VFF=Y/M/C/K	Indicates the target value for VL (with laser output at off). Indicates the optimum value computed by potential control.	Unit = V Optimum value: 50 to 300
VDC=Y/M/C/K	Indicates the target value for Vdc (developing bias DC component). Indicates the optimum value computed by potential control.	Unit = V Optimum value: 200 to 650
VG=Y/M/C/K	Indicates the target value for Vg (grid bias). Indicates the optimum value computed by potential control.	Unit = V Optimum value: 300 to 800

The measurements of VOO and VFF may be checked by 'EPC' under 'FUNC'.

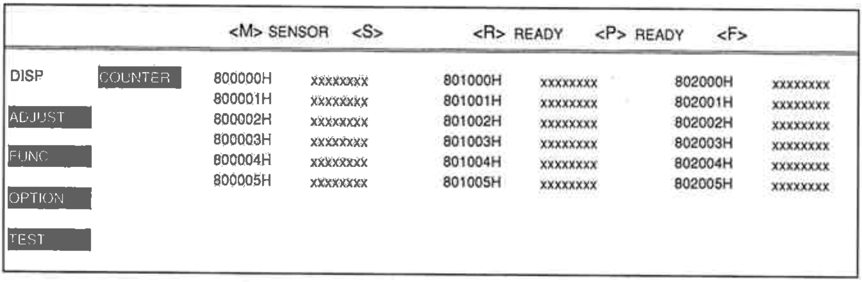
6. SHD/BOF (shading/black offset data)



```
<M> SHD/BOF   <S>          <R> READY    <P> READY    <F>

BAR-CODE                   BOARD-B      BOARD-G      BOARD-R
xxxxxxxxxxxx                     xxx          xxx          xxx
                           TARGET-B     TARGET-G     TARGET-R
                                 xxx          xxx          xxx
                           BOF-B        BOF-G        BOF-R
                              xx   xx      xx   xx      xx   xx
```

Item	Description	Remarks
BAR-CODE	Indicates the bar code value of the standard white plate.	The value is indicated only after executing FUNC>CCD>AUTO>ADJ. (Thereafter, the value will not be indicated at power on/off.)
BOARD-B/G/R	Indicates the output of each CCD when the standard white plate is read. (output value after A/D conversion)	Initial value: 211
TARGET-B/G/R	Indicates the shading target value.	Initial value: 233
BOF-B/G/R	Indicates the output of each CCD when the scanning lamp is off. (odd bit/even bit)	

7. SENSOR (sensor/DC controller input port)



```
                      <M> SENSOR   <S>            <R> READY    <P> READY     <F>

DISP      COUNTER   800000H   xxxxxxxx        801000H   xxxxxxxx       802000H   xxxxxxxx
                    800001H   xxxxxxxx        801001H   xxxxxxxx       802001H   xxxxxxxx
ADJUST              800002H   xxxxxxxx        801002H   xxxxxxxx       802002H   xxxxxxxx
                    800003H   xxxxxxxx        801003H   xxxxxxxx       802003H   xxxxxxxx
FUNC                800004H   xxxxxxxx        801004H   xxxxxxxx       802004H   xxxxxxxx
                    800005H   xxxxxxxx        801005H   xxxxxxxx       802005H   xxxxxxxx
OPTION

TEST
```

Item	Description	Remarks
800000H ı 808004H	Indicates the input ports of the DC controller PCB. (800000H through 808004H)	

NO1

Address		Connector	Description	Remarks
800000H	7		Photosensitive drum thermistor error	Error: 1
	6		Fixing heater thermistor error	Error: 1
	5	J2231-B8	Photosensitive drum heater power error	Error: 0
	4	J2213-B9	Fixing heater power error	Error: 0
	3	–	Reserved	–
	2	–	Reserved	–
	1	J2234-7	AC input	AC input: 0
	0	J2227-7	Power switch	ON: 1
800001H	7	J2234-2	Power supply assembly fan operation error	Error: 1
	6	J2234-11	Overheating 24 VU	Error: 1
	5	J2234-4	Overheating 24 VR	Error: 1
	4	J2234-3	Overheating 5 VU	Error: 1
	3	J2221-1,2.3	24 VU error	Error: 0
	2	J2201-5	5 VU error	Error: 0
	1	J2209-B12	Auto shutoff open circuit detection	Error: 1
	0	J2212-A2	Counter error	Error: 1
800002H	7	J2213-A1	Fixing motor overcurrent detection	Error: 1
	6	J2218-A10	Polishing/oil removing motor PLL error	Error: 1
	5	J2223-B7	Holding tray drive motor PLL error	Error: 1
	4	J2226-A1	Waste toner feeding motor PLL error	Error: 1
	3	J2213-A5	Fixing motor PLL error	Error: 1
	2	J2208-B1	Scanner motor PLL error	Error: 1
	1	J2226-A13	Drum motor PLL error	Error: 1
	0	J2213-A8	Pick-up motor PLL error	Error: 1

NO2

Address		Connector	Description	Remarks
800003H	7	–	Reserved	–
	6	–	Reserved	–
	5	–	Reserved	–
	4	–	Reserved	–
	3	J2223-B4	Bk developing motor PLL error	Error: 1
	2	J2223-B2	C developing motor PLL error	Error: 1
	1	J2226-A8	M developing motor PLL error	Error: 1
	0	J2226-A6	Y developing motor PLL error	Error: 1
800004H	7	–	Reserved	–
	6	–	Reserved	–
	5	–	Reserved	–
	4	J2225-B4	Buffer unit cover open/closed	Cover open: 1
	3	J2223-A10	Paped deck cover open/closed	Cover open: 1
	2	J2209-B9	Control key	Key ON: 0
	1	J2212-A8	Front cover open/closed	Cover open: 1
	0	J2222-B6	Pick-up assembly cover open/closed	Cover open: 0
800005H	7	–	Reserved	–
	6	–	Reserved	–
	5	J2225-B5	Buffer unit connection	Connected: 0
	4	J2223-A14	Paper deck connection	Connected: 0
	3	J2218-B2	Transfer unit connection	Connected: 0
	2	J2224-A2	Holding tray unit connection	Connected: 0
	1	J2223-B12	Fixing knob connection	Connected: 0
	0	J2209-A14	Fixing assembly connection	Connected: 0

NO3

Address		Connector	Description	Remarks
801000H	7	–	Reserved	–
	6	–	Reserved	–
	5	–	Reserved	–
	4	J2207-A14	Transparency sensor (OHPS)	Paper present: 1
	3	J2222-B12	Pick-up vertical path 3 paper sensor (PS26)	Paper present: 1
	2	J2222-B9	Pick-up vertical path 2 paper sensor (PS25)	Paper present: 1
	1	J2222-B5	Pick-up vertical path 1 paper sensor (PS21)	Paper present: 1
	0	J2207-A13	Registration paper sensor (PS1)	Paper present: 1
801001H	7	J2214-B5	Holding tray pre-feeding sensor 2 (PS9)	Paper present: 0
	6	J2214-B2	Holding tray pre-feeding sensor 1 (PS8)	Paper present: 1
	5	J2211-A10	Holding tray paper sensor 2 (PS31)	Paper present: 0
	4	J2211-A9	Holding tray paper sensor 1 (PS30)	Paper present: 1
	3	J2211-A11	Delivery sensor (PS34) jam detection	Paper present: 1
	2	J2211-B5	Internal delivery sensor (PS35) jam detection	Paper present: 0
	1	J2218-B1	Separation sensor (PS15) jam detection	Paper present: 1
	0	J2218-A18	Registration rear paper sensor (PS14) jam detection	Paper present: 1
801002H	7	–	Reserved	–
	6	–	Reserved	–
	5	–	Reserved	–
	4	–	Reserved	–
	3	J2211-B8	Delivery vertical path 1 paper sensor (PS38)	Paper present: 0
	2	J2225-B3	Buffer unit inlet paper sensor (PS3)	Paper present: 1
	1	–	For factory	–
	0	J2224-A5	Holding tray flapper assembly jam detection	Paper present: 0

NO4

Address		Connector	Description	Remarks
801003H	7	–	Reserved	–
	6	–	Reserved	–
	5	–	Reserved	–
	4	–	Reserved	–
	3	J2226-B6	Cassette 2 paper length sensor 1 (PS104)	Detect the paper length by the combination of the signals.
	2	J2226-B5	Cassette 2 paper length sensor 2 (PS103)	
	1	J2226-B2	Cassette 1 paper length sensor 1 (PS102)	
	0	J2226-B1	Cassette 1 paper length sensor 2 (PS101)	
801004H	7	–	Reserved	–
	6	J2224-B8	Duplexing unit stacking guide home position sensor (PS29)	Detected: 1
	5	J2223-A9	Paper deck lifter lower switch(SW8002)	Detected: 0
	4	J2223-A8	Paper deck lifter upper limit switch (SW8001	Detected: 1
	3	J2207-B11	Multifeeder lifter sensor (lower; PS3)	Detected: 1
	2	J2207-B5	Multifeeder lifter sensor (upper; PS2)	Detected: 1
	1	J2222-B10	Cassette 2 lifter sensor (lower; PS27)	Detected: 1
	0	J2222-B7	Cassette 1 lifter sensor (upper; PS24)	Detected: 1
801005H	7	J2224-A8	Holding tray paper sensor 2 (PS31)	Paper present: 0
	6	J2224-A7	Paper deck paper sensor (PS8001)	Paper present: 1
	5	J2222-B11	Cassette 2 paper sensor (PS28)	Paper present: 1
	4	J2222-B8	Cassette 1 paper sensor (PS23)	Paper present: 1
	3	–	Reserved	–
	2	J2207-B4	Multifeeder open/closed detection (SW6)	Open: 1
	1	J2207-B13	Multifeeder paper sensor (rear; PS5)	Paper present: 0
	0	J2207-B12	Multifeeder paper sensor (front; PS4)	Paper present: 0

NO5

Address		Connector	Description	Remarks
802000H	7	J2205-97	For factory	–
	6	J2205-95	For factory	–
	5	J2205-93	For factory	–
	4	J2205-91	For factory	–
	3	J2206-B7	For factory	–
	2	J2206-B3	For factory	–
	1	J2206-A9	For factory	–
	0	J2230-6	For factory	–
802001H	7	–	Reserved	–
	6	–	Reserved	–
	5	–	Reserved	–
	4	–	Reserved	–
	3	J2212-B13	Bk toner level sensor (upper; TS4)	Below: 1
	2	J2212-B12	C toner level sensor (TS3)	Below: 1
	1	J2212-B11	M toner level sensor (TS2)	Below: 1
	0	J2212-B10	Y toner level sensor (TS1)	Below: 1
802002H	7	–	Reserved	–
	6	–	Reserved	–
	5	–	Reserved	–
	4	–	Reserved	–
	3	J2209-A14	Upper fixing web length sensor (PS36)	Web absent: 1
	2	J2209-A12	Fixing oil level sensor (OS1)	Oil absent: 1
	1	J2223-B10	Waste toner lock detecting switch (SW4)	Locked: 0
	0	J2218-A8	Transfer belt cleaning web length sensor (PS11)	Web absent: 1

NO6

Address		Connector	Description	Remarks
802003H	7	J2218-A7	Transfer belt cleaning web rotation sensor (PS10)	While in rotation, alternately 1 and 0.
	6	J2219-B1	Transfer belt home position sensor (PS16)	Detected: 1
	5	J2219-B8	Transfer belt edge sensor 4 (rear; PS20)	Detected: 1
	4	J2219-B7	Transfer belt edge sensor 3 (front; PS19)	Detected: 1
	3	J2219-B3	Transfer belt edge sensor 2 (rear; PS18)	Detected: 0
	2	J2219-B2	Transfer belt edge sensor 1 (front; PS17)	Detected: 0
	1	J2218-A6	Transfer belt lifter sensor 2 (PS13)	Down: 1
	0	J2218-A5	Transfer belt lifter sensor 1 (PS12)	Up: 1
802004H	7	J2241-4	Pattern reading CCD shutter (rear)	Closed: 1
	6	J2241-7	Pattern reading CCD shutter (front)	Open: 1
	5	–	For factory	–
	4	–	For factory	–
	3	–	For factory	–
	2	–	For factory	–
	1	–	For factory	–
	0	–	For factory	–
802005H	7	–	For factory	–
	6	–	For factory	–
	5	–	For factory	–
	4	–	For factory	–
	3	–	For factory	–
	2	–	For factory	–
	1	–	For factory	–
	0	–	For factory	–

NO7

Address		Connector	Description	Remarks
803000H	7	–	Reserved	–
	6	–	Reserved	–
	5	J2205-83	Video controller reset	Reset: 0
	4	J2239-B4	Auto shut-off	ON: 1
	3	–	Reserved	–
	2	–	Reserved	–
	1	J2206-B1	DC power supply ready	Ready: 1
	0	–	For factory	–
803001H	7	–	Reserved	–
	6	–	Reserved	–
	5	J2207-B10	Environment sensor (EV1)	Low humid: 0
	4	J2234-6	Night power switching	Outlet sync: 0 ps sync: 1
	3	–	For factory	–
	2	–	For factory	–
	1	–	For factory	–
	0	–	For factory	–
803002H	7	J2226-A2	Waste toner feeding motor ON	ON: 1
	6	J2219-B4	Transfer belt motor ON	ON: 1
	5	J2208-B2	Scanner motor ON	ON: 1
	4	J2226-A13	Drum motor ON	ON: 1
	3	J2213-A10	Pick-up motor ON	ON: 1
	2	–	For factory	–
	1	J2213-A2	Fixing motor speed switching	Switched: 1
	0	J2213-A6	Fixing motor ON	ON: 1

NO8

Address		Connector	Description	Remarks
803003H	7	J2239-A8	Bk exposure lamp ON	ON: 1
	6	J2239-A6	C exposure lamp ON	ON: 1
	5	J2239-A4	M exposure lamp ON	ON: 1
	4	J2239-A2	Y exposure lamp ON	ON: 1
	3	J2223-B5	Bk developing motor ON	ON: 1
	2	J2223-B2	C developing motor ON	ON: 1
	1	J2226-A10	M developing motor ON	ON: 1
	0	J2223-A7	Y developing motor ON	ON: 1
803004H	7	–	Reserved	–
	6	J2218-B10	Polishing roller solenoid ON	ON: 1
	5	J2218-A4	Transfer belt cleaning web motor ON	ON: 1
	4	J2226-A5	Transfer belt lifter clutch ON	ON: 1
	3	J2218-A8	Polishing/oil removing motor rotation direction	Polishing: 1 Oil removing: 1
	2	J2218-A11	Polishing/oil removing motor ON	ON: 1
	1	J2220-2	Transfer cleaning blade solenoid OFF	Away from belt: 0
	0	J2220-1	Transfer cleaning blade solenoid ON	In contact with belt: 0
803005H	7	J2220-10	Bk transfer blade solenoid OFF	Away from belt: 0
	6	J2220-9	Bk transfer blade solenoid ON	In contact with belt: 0
	5	J2220-8	C transfer blade solenoid OFF	Away from belt: 0
	4	J2220-7	C transfer blade solenoid ON	In contact with belt: 0
	3	J2220-6	M transfer blade solenoid OFF	Away from belt: 0
	2	J2220-5	M transfer blade solenoid ON	In contact with belt: 0
	1	J2220-4	Y transfer blade solenoid OFF	Away from belt: 0
	0	J2220-3	Y transfer blade solenoid ON	In contact with belt: 0

NO9

Address		Connector	Description	Remarks
804000H	7	J2229-B12	Bk primary wire cleaner motor	To rear: 1
	6	J2229-B11	Bk primary wire cleaner motor	To front: 1
	5	J2229-B10	C primary cleaner motor	To rear: 1
	4	J2239-B9	C primary wire cleaner motor	To front: 1
	3	J2239-B2	M primary wire cleaner motor	To rear: 1
	2	J2229-B1	M primary wire cleaner motor	To front: 1
	1	J2229-A8	Y primary wire cleaner motor	To rear: 1
	0	J2229-A7	Y primary wire cleaner motor	To front: 1
804001H	7	J2228-B13	Separation wire cleaner motor	To rear: 1
	6	J2228-B12	Separation wire cleaner motor	To front: 1
	5	J2209-B14	Hopper sensor select	TS1,2,3,8: 1 TS4,5,6,7: 0
	4	J2209-B7	Bk toner supply clutch (lower)	ON: 1
	3	J2209-B6	Bk toner supply clutch (upper)	ON: 1
	2	J2209-B5	C toner supply clutch	ON: 1
	1	J2209-B4	M toner supply clutch	ON: 1
	0	J2209-B3	Y toner supply clutch	ON: 1
804002H	7	–	Reserved	–
	6	–	Reserved	–
	5	–	Reserved	–
	4	J2211-B6	Separation claw releasing solenoid ON	ON: 1
	3	J2209-A4	Fixing oil pump solenoid ON	ON: 1
	2	J2213-B6	Fixing web motor ON	ON: 1
	1	J2209-A7	Upper fixing web releasing solenoid ON	ON: 1
	0	J2209-A6	Upper fixing web take-up solenoid ON	ON: 1

NO10

Address		Connector	Description	Remarks
804003H	7	J2213-B2	Bk drum heater ON	ON: 1
	6	J2213-B3	C drum heater ON	ON: 1
	5	J2213-B4	M drum heater ON	ON: 1
	4	J2213-B5	Y drum heater ON	ON: 1
	3	–	Reserved	–
	2	J2213-B1	Cassette heater ON	ON: 1
	1	J2213-B10	Lower fixing heater ON	ON: 1
	0	J2213-B11	Upper fixing heater ON	ON: 1
804004H	7	J2212- A1,4 A7,10	Y/M/C/Bk SALT sensor shutter solenoid (closed)	ON: 1
	6	J2212- A2,5 A8,11	Y/M/C/Bk SLAT sensor shutter solenoid (open)	ON: 1
	5	J2204-30,32	Pattern reading LED ON	ON: 1
	4	J2229- A6,13 B8	Toner density sensor LED ON	ON: 1
	3	J2228-B10	Bk SALT sensor LED ON	ON: 1
	2	J2228-B5	C SALT sensor LED ON	ON: 1
	1	J2228-A12	M SALT sensor LED ON	ON: 1
	0	J2228-A6	Y SALT sensor LED ON	ON: 1
804005H	7	J2212- B3,B6 A15	Delivery fan speed switching	Low speed: 1 High speed: 0
	6	–	Reserved	–
	5	J2225-B10,12	Lower delivery fan ON	ON: 1
	4	J2212- B2,5 A14	Delivery cooling fan ON	ON: 1
	3	J2214-2	Pre-fixing feeding suction fan ON	ON: 1
	2	J2233-2	Primary exhaust fan ON	ON: 1
	1	J2215-B2,B4	Primary suction fan ON	ON: 1
	0	J2208-B7,B9	Laser cooling fan	ON: 1

NO11

Address		Connector	Description	Remarks
805000H	7	–	Reserved	–
	6	–	Reserved	–
	5	J2224-A13	Paper feeding roller solenoid ON	ON: 1
	4	J2222-A3	Duplexing unit pick-up roller releasing solenoid ON	ON: 1
	3	J2223-A6	Paper deck pick-up roller releasing solenoid ON	ON: 1
	2	J2207-A3	Multifeeder pick-up releasing solenoid ON	ON: 1
	1	J2222-A12	Cassette 2 pick-up roller releasing solenoid ON	ON: 1
	0	J2222-A8	Cassette 1 pick-up roller releasing solenoid ON	ON: 1
805001H	7	–	Reserved	–
	6	J2222-A4	Duplexing assembly pick-up clutch ON	ON: 1
	5	J2223-A13	Paper deck feeding clutch ON	ON: 1
	4	J2223-A12	Paper deck pick-up clutch ON	ON: 1
	3	J2207-A2	Multifeeder feeding clutch ON	ON: 1
	2	J2207-A1	Multifeeder pick-up clutch ON	ON: 1
	1	J2222-B3	Cassette 2 pick-up clutch ON	ON: 1
	0	J2222-A9	Cassette 1 pick-up clutch ON	ON: 1
805002H	7	J2222-B4	Pick-up vertical path roller 3 clutch ON	ON: 1
	6	J2222-A10	Pick-up vertical path roller 2 clutch ON	ON: 1
	5	J2222-A5	Pick-up vertical path roller 1 clutch ON	ON: 1
	4	J2207-A4	Registration roller clutch ON	ON: 1
	3	–	Reserved	–
	2	J2207-A12	Paper thickness sensor LED ON	ON: 1
	1	J2207-A15	Transparency sensor LED ON	ON: 1
	0	J2207-A5	Registration releasing solenoid ON	ON: 1

NO12

Address		Connector	Description	Remarks
805003H	7	–	Reserved	–
	6	–	Reserved	–
	5	J2223-A5	Paper deck lifter motor (down)	Down: 1
	4	J2223-A4	Paper deck lifter motor (up)	Up: 1
	3	J2239-B6	Multifeeder lifter motor (down)	Down: 1
	2	J2239-B5	Multifeeder lifter motor (up)	Up: 1
	1	J2222-A11	Cassette 2 lifter motor ON	ON: 1
	0	J2222-A7	Cassette 1 lifter motor ON	ON: 1
805004H	7	J2223-B11	Duplexing unit paper deflecting solenoid (S) ON	ON: 1
	6	J2224-B12	Duplexing unit paper deflecting plate solenoid (R) ON	ON: 1
	5	J2224-B13	Duplexing unit paper deflecting plate solenoid (L) ON	ON: 1
	4	J2211-B4	Delivery paper deflecting plate solenoid ON	ON: 1
	3	J2223-B8	Duplexing unit feeding motor ON	ON: 1
	2	J2223-B15	Reversal drive clutch ON	ON: 1
	1	J2224-A10	Stopper plate solenoid DOWN	Down: 1
	0	J2224-A11	Stopper plate solenoid UP	Up: 1
805005H	7	J2241-2	Pattern reading CCD shutter (open)	ON: 1
	6	J2241-1	Pattern reading CCD shutter (closed)	ON: 1
	5	J2210-B	Bk image position correcting mirror ratio correction motor (M8)	ON: 0
	4	J2210-B	Bk image position correcting mirror slope correction motor (M7)	ON: 0
	3	J2210-A	C image position correcting mirror ratio correction motor (M6)	ON: 0
	2	J2210-A	C image position correcting mirror slope correction motor (M5)	ON: 0
	1	J2208-A	Y image position correcting mirror ratio correction motor (M3)	ON: 0
	0	J2208-A	Y image position correction mirror slope correction motor (M2)	ON: 0

NO13

Address		Connector	Description	Remarks
806000H	7	–	Reserved	–
	6	–	Reserved	–
	5	J2212-B13	Total copy counter 6	ON: 1
	4	J2212-B12	Total copy counter 5	ON: 1
	3	J2212-B11	Total copy counter 4	ON: 1
	2	J2212-B10	Total copy counter 3	ON: 1
	1	J2212-B9	Total copy counter 2	ON: 1
	0	J2212-B8	Total copy counter 1	ON: 1
806002H	7	–	For factory	–
	6	–	For factory	–
	5	–	For factory	–
	4	–	For factory	–
	3	–	For factory	–
	2	–	For factory	–
	1	–	For factory	–
	0	–	For factory	–
806004H	7	–	For factory	–
	6	–	For factory	–
	5	–	For factory	–
	4	–	For factory	–
	3	–	For factory	–
	2	J2237-5	2nd bit in counter mode	In service mode VERSION> CNT-MODE
	1	J2237-3	1st bit in counter mode	
	0	J2237-1	0th bit in counter mode	

NO14

Address		Connector	Description	Remarks
807000H	7	–	For factory	–
	6	–	For factory	–
	5	–	For factory	–
	4	–	For factory	–
	3	–	For factory	–
	2	–	For factory	–
	1	–	For factory	–
	0	–	For factory	–
807002H	7	–	For factory	–
	6	–	For factory	–
	5	–	For factory	–
	4	–	For factory	–
	3	–	For factory	–
	2	–	For factory	–
	1	–	For factory	–
	0	–	For factory	–
807004H	7	–	For factory	–
	6	–	For factory	–
	5	–	For factory	–
	4	–	For factory	–
	3	–	For factory	–
	2	–	For factory	–
	1	–	For factory	–
	0	–	For factory	–

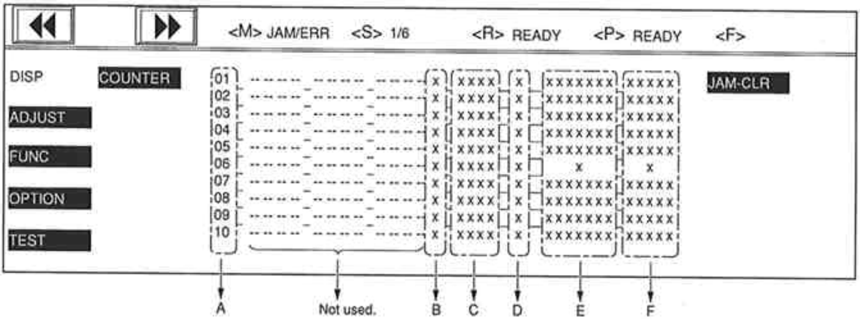
NO15

Address		Connector	Description	Remarks
808000H	7	–	Reserved	–
	6	–	Reserved	–
	5	J2225-A10	Gear switching clutch (CL1) ON	ON: 0
	4	J2225-A6	Buffer path home position select	Enabled: 1
	3	J2225-A9	Locking cam switching solenoid 2 (SL2) ON	ON: 0
	2	J2225-A5	Locking cam switching solenoid 1 (SL1) ON	ON: 0
	1	J2225-A7	Buffer path unit enable	ON: 0
	0	J2225-A3	Buffer path motor (M1)	ON: 0
808002H	7	J2215-A9,J2218-B11,J2216-B9	Transfer, separation, pre-fixing high voltage enable	Enabled: 1
	6	J2217-A9	Anti-stray toner high voltage ON	ON: 1
	5	J2217-A10	Blank pulse enable	Enabled: 1
	4	J2215-A10	Separation AC bias ON	ON: 1
	3	J2215-B7	Bk primary bias ON	ON: 1
	2	J2215-B10	C primary bias ON	ON: 1
	1	J2215-A3	M primary bias ON	ON: 1
	0	J2215-A6	Y primary bias ON	ON: 1
808004H	7	J2217-B2	Bk developing bias (DC) ON	ON: 1
	6	J2217-B5	C developing bias (DC) ON	ON: 1
	5	J2217-A2	M developing bias (DC) ON	ON: 1
	4	J2217-A5	Y developing bias (DC) ON	ON: 1
	3	J2217-B3	Bk developing bias (AC) ON	ON: 1
	2	J2217-B6	C developing bias (AC) ON	ON: 1
	1	J2217-A3	M developing bias (AC) ON	ON: 1
	0	J2217-A6	Y developing bias (AC) ON	ON: 1

8. Jam/E Code

The 1st through 4th screens show the most recent 40 jams (location and type).
The 5th and 6th screens provide histories of errors.

- 1st through 4 th Screes (Jam code)


◀◀
▶▶
<M> JAM/ERR
<S> 1/6
<R> READY
<P> READY
<F>
DISP
COUNTER
ADJUST
FUNC
OPTION
TEST
JAM-CLR
01
02
03
04
05
06
07
08
09
10
x
xxxx
xxxxxxx
xxxxx
A
Not used.
B
C
D
E
F

A	Jam history number (01 through 40; a higher number represents an older history)
B	Jam location (See Table B on the next page.)
C	Jam code (See Table C-1/C-2 on the next page.)
D	Pick-up location (See Table D on the next page.)
E	Pick-up soft counter (by pick-up assembly)
F	Paper Size

Item	Description
JAM-CLR	Clear all jam histories

Table A Jam Location

1	Body
2	RDF-1
3	Sorter

Table B Jam Code (high-order 2 digits)

00	Option jam
01	Delay jam
02	Stationary jam
10	Jam at power-on or when the front cover, pick-up cover, or delivery cover is opened/closed.
11	Jam when the front cover, pick-up assembly cover, or delivery cover is opened/closed during copying operation.

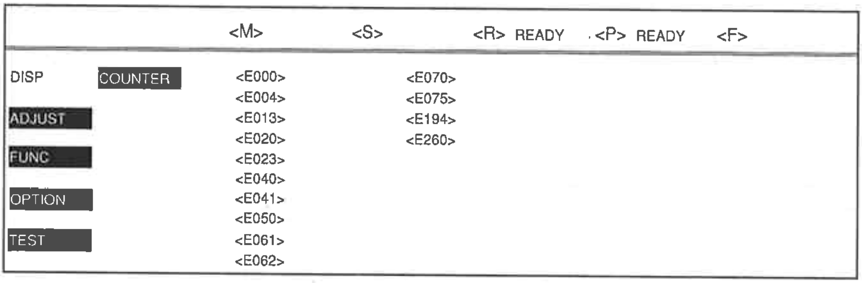
Table C Jam Code (low-order 2 digits)

01	Registration paper sensor	PS1
02	Pick-up vertical path 1 sensor	PS21
03	Pick-up vertical path 2 sensor	PS25
04	Pick-up vertical path 3 sensor	PS26
31	Registration rear sensor	PS14
32	Separation sensor	PS15
33	Internal delivery sensor	PS35
34	Delivery sensor	PS34
35	Buffer pass paper sensor	
36	Sorter	
61	Delivery vertical path sensor	PS38
62	Delivery vertical path sensor 2	PS32
63	Duplexing unit reversal sensor	PS33
64	Holding tray front feeding sensor 1	PS8
65	Holding tray front feeding sensor 2	PS9
66	Holding tray paper sensor 1	PS30
67	Holding tray paper sensor 2	PS31

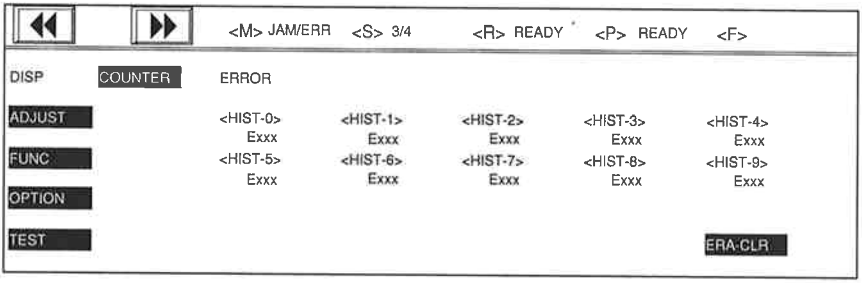
Table D Pick-Up Location

1	Upper cassette
2	Lower cassette
3	Paper deck
8	Multifeeder
9	Duplexing unit

5th/6th Screen (E code)


<M>
<S>
<R> READY
<P> READY
<F>
DISP
COUNTER
ADJUST
FUNC
OPTION
TEST

<E000> <E070>
<E004> <E075>
<E013> <E194>
<E020> <E260>
<E023>
<E040>
<E041>
<E050>
<E061>
<E062>

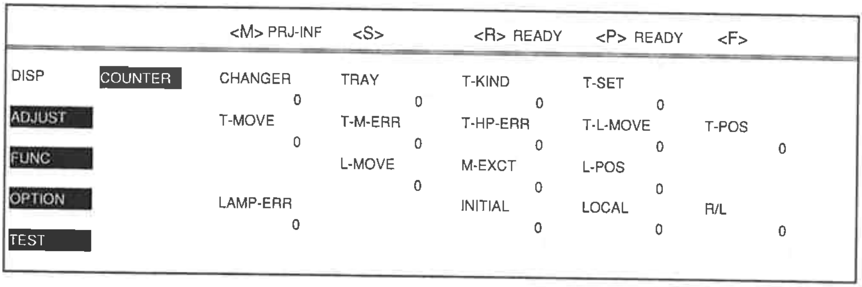

◀◀
▶▶
<M> JAM/ERR
<S> 3/4
<R> READY
<P> READY
<F>
DISP
COUNTER
ADJUST
FUNC
OPTION
TEST
ERA-CLR

ERROR

<HIST-0> Exxx <HIST-1> Exxx <HIST-2> Exxx <HIST-3> Exxx <HIST-4> Exxx
<HIST-5> Exxx <HIST-6> Exxx <HIST-7> Exxx <HIST-8> Exxx <HIST-9> Exxx

Item	Description
<CODE>	Indicates the appropriate error code (E) for the results of self diagnosis.
<E000> <E012> <E020> <E030> <E040> <E061> <E072> <E073>	Indicates detail codes for each error code. (See the descriptions on self diagnosis.)
<HIST-0> ≀ <HIST-9>	Indicates a history of error codes (E). • HIST-0 is the most recent.
ERA-CLR	Clears all error code histories.

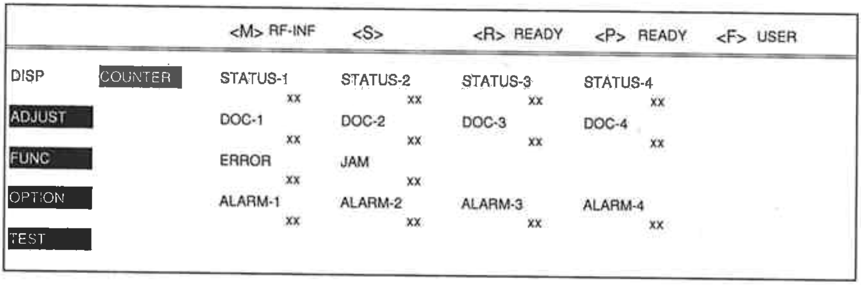
9. PRJ-INF (state of the projector)



```
                    <M> PRJ-INF    <S>          <R> READY    <P> READY    <F>
DISP     COUNTER    CHANGER        TRAY         T-KIND       T-SET
                          0              0            0            0
ADJUST              T-MOVE         T-M-ERR      T-HP-ERR     T-L-MOVE     T-POS
                          0              0            0            0            0
FUNC                               L-MOVE       M-EXCT       L-POS
                                         0            0            0
OPTION              LAMP-ERR                    INITIAL      LOCAL        R/L
                          0                           0            0            0
TEST
```

Item	Description	State
CHANGER	Indicates the presence/absence of a rotary changer.	1: Present
TRAY	Indicates the presence/absence of a slide tray.	1: Present
T-KIND	Indicates the type of tray.	1: 140 0: 80
T-SET	Indicates if a slide is set.	1: Set
T-MOVE	Indicates that the tray is moving.	1: Moving
T-M-ERR	Indicates an error in the mechanism that moves the tray.	1: Error
T-HP-ERR	Indicates a tray home position error.	1: Error
T-L-MOVE	Indicates that the tray is moving (local).	1: Moving
T-POS	Indicates the position of the tray.	0: Home position Increases by 1 every rotation
L-MOVE	Indicates that the lens is moving.	1: Moving
M-EXCT	Indicates the state of motor excitation.	1: Excited
L-POS	Indicates the position of the lens.	0: Home position
LAMP-ERR	Indicates an open circuit in the lamp.	1: Open circuit
INITIAL	Indicates that initialization is under way.	1: Processing
LOCAL	Indicates local movement.	1: Operating
R/L	Indicates remote/local mode.	0: Remote 1: Local

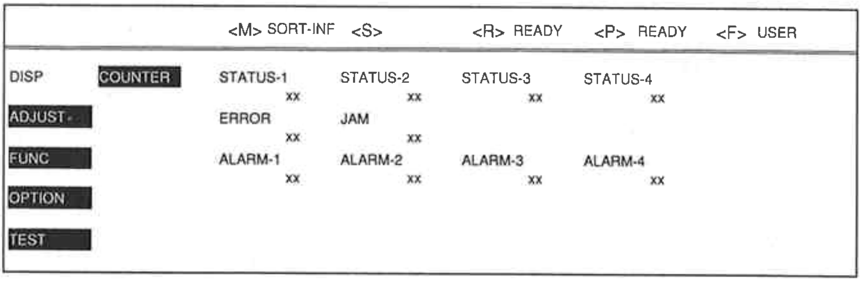
10. RF-INF (RDF state)



```
                    <M> RF-INF   <S>          <R> READY    <P> READY    <F> USER
DISP     COUNTER    STATUS-1     STATUS-2     STATUS-3     STATUS-4
                           xx           xx           xx           xx
ADJUST              DOC-1        DOC-2        DOC-3        DOC-4
                           xx           xx           xx           xx
FUNC                ERROR        JAM
                           xx           xx
OPTION              ALARM-1      ALARM-2      ALARM-3      ALARM-4
                           xx           xx           xx           xx
TEST
```

Item	Description
STATUS-1/2/3/4	For R&D
DOC-1/2/3/4	For R&D
ERROR	Indicates the error code sent by the RDF controller PCB. 01H:equivalent of E401 02H:equivalent of E402 03H:equivalent of E403 04H:equivalent of E404 05H:equivalent of E405 06H:no corresponding error 07H:equivalent of E407 11H:equivalent of E411 21H:equivalent of E400
JAM	For R&D
ALARM-1/2/3/4	Indicates the alarm code sent by the RDF controller PCB. 01H:re-circulating bar idle rotation 02H:not used 03H:separation failure 04H:separation skew 05H:not used

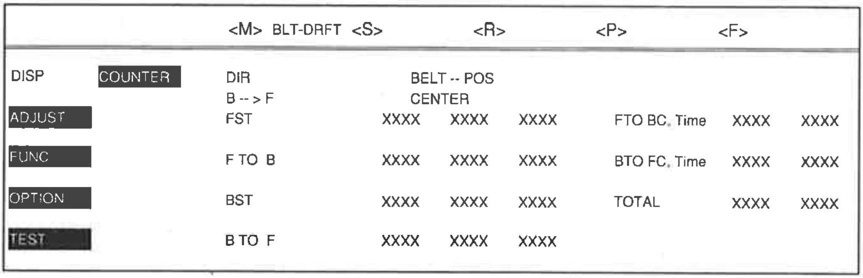
11. SORT-INF (SORT state)



```
                     <M> SORT-INF  <S>          <R> READY    <P> READY    <F> USER

DISP      COUNTER    STATUS-1      STATUS-2      STATUS-3      STATUS-4
                           xx            xx            xx            xx
ADJUST               ERROR         JAM
                           xx            xx
FUNC                 ALARM-1       ALARM-2       ALARM-3       ALARM-4
                           xx            xx            xx            xx
OPTION

TEST
```

Item	Description
STATUS-1/2/3/4	For R&D
ERROR	For R&D
JAM	Indicates the jam code sent by the sorter controller PCB. 03H:feeding delay jam 04H:feeding stationary jam 06H:staple jam 07H:power-on jam 08H:cover open jam (during feeding) 09H:cover open jam (other than during feeding)
ALARM-1/2/3/4	Indicates the alarm code sent by the sorter controller PCB. ALARM-1 02H:overstacking ALARM-2 02H:staple jam 03H:stapler safety mechanism activation 04H:stapler overstacking 05Hmixed paper sizes (horizontal) 07H:stapler unit absent 0AH:staple absent ALARM-3/4for future use

12. BLT-DRFT (belt swing data display)



```
                    <M> BLT-DRFT <S>          <R>          <P>          <F>
DISP      COUNTER   DIR             BELT -- POS
                    B -- > F        CENTER
ADJUST              FST          XXXX   XXXX   XXXX    FTO BC. Time   XXXX   XXXX
FUNC                F TO B       XXXX   XXXX   XXXX    BTO FC. Time   XXXX   XXXX
OPTION              BST          XXXX   XXXX   XXXX    TOTAL          XXXX   XXXX
TEST                B TO F       XXXX   XXXX   XXXX
```

Item	Description	Remarks
DIR	Indicates the present swing condition (direction) of the transfer belt. DIR B->F: moving (swinging) from rear to front F->B: moving (swinging) from front to rear	Unit= 0.1 sec
BELT--POS	Indicates the present condition (position) of the transfer belt. BELT_POS FRONT: near front CENTER: near center BACK: near rear	
FST	Indicates the time required by the transfer belt between when it reaches the transfer belt end sensor (PS17, front) and when it leaves the sensor. FST XXXX XXXX XXXX Most recent data Second most recent data Third most recent data	Unit= 0.1 sec
F TO B	Indicates the time required by the transfer belt between when it reaches the transfer belt end sensor (PS17, front) and when it reaches the end sensor 2 (PS18, rear). F TO B XXXX XXXX XXXX Most recent data Second most recent data Third most recent data	Unit= 0.1 sec
BST	Indicates the time required by the transfer belt between when it reaches the transfer belt end sensor 1 (PS18, rear) and when it leaves the sensor. BST XXXX XXXX XXXX Most recent data Second most recent data Third most recent data	Unit= 0.1 sec
B TO F	Indicates the time required by the transfer belt between when it reaches the transfer belt end sensor 2 (PS18, rear) and when it reaches the end sensor 1 (PS17, front). B TO F XXXX XXXX XXXX Most recent data Second most recent data Third most recent data	Unit= 0.1 sec

Item	Description	Remarks
F TO B C.Time	Indicates data (F TO B data minus FST data); time taken by the belt to move from front to back. F TO B C. Time XXXX XXXX second most recent third most recent	Unit= 0.1 sec
B TO F C.Time	Indicates data (B TO F data minus BST data); time taken by the belt to move from back to front. B TO F C. Time XXXX XXXX second most recent third most recent	Unit= 0.1 sec
TOTAL	indicates data (F TO B data plus B TO F data); time taken by the belt to make a round trip.	Unit= 0.1 sec

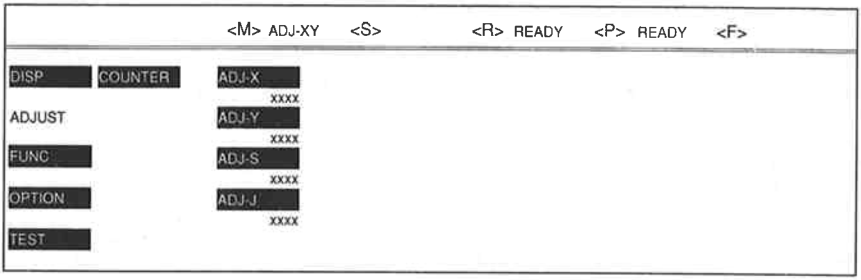
C. ADJUST (adjustment)

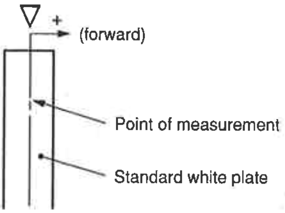
		<M>	<S>	<R>	<P>	<F>
DISP	COUNTER	ADJ-XY		DOC-REC	PROJ	ED/RF
ADJUST		V-CONT		COL-ADJ	PASCAL	ADJ-MISC
FUNC		FEED-ADJ		REG-OFS		ENV-SET
OPTION			HV-TRY	HV-TRM	HV-TRC	HV-TRK
TEST			HV-SP	HV-FS	HV-EL	DTMP-ADJ

1	ADJ-XY	Adjusts the image start position.
2	DOC-REC	Adjusts the original detection area/slide level.
3	PROJ (Note 1)	Adjusts the projector area.
4	ED/RF	Adjusts the editor.
5	V-CONT	Adjusts the photosensitive drum surface potential contrast.
6	COL-ADJ	Corrects the color balance (for user).
7	PASCAL	Determines whether to use or not data obtained by auto gradation correction control and display of data related to auto gradation correction control.
8	ADJ-MISC	ADJ-MNISC (adjustments other than above)
9	FEED-ADJ	Adjusts the feeding position.
10	REG-OFS	For R & D
11	ENV-SET	Use it to set cassette heater operation conditions.
12	HV-TR Y/M/C/K	Fine-adjusts transfer high-voltage output by condition.
13	HV-SP	Fine-adjusts separation high-voltage output by condition.
14	HV-FS	Use it to make fine-adjustments for the pre-fixing high-voltage output according to conditions.
15	HV-EL	Use it to make fine-adjustments for the internal static eliminator high-voltage output according to conditions.
16	DTMP-ADJ	For future expansion

Note 1:
Only if connected the projector

1. ADJ-XY (image read start position adjustment)



Item	Description	Remarks
ADJ-X (Note 1)	Use it to make adjustments so that the image read start position (X direction, sub scanning direction) matches the reference point on the copyboard glass. Fine-adjusts the distance from the original scanner home position sensor to the read start position. • Unit: Number of steps of the stepping motor. • Follow the instructions on the next page.	Settings: –100~+100 (–3.9~+3.9mm) Unit= 0.11 mm (approx.)
ADJ-Y (Note 1)	Use it to make adjustments so that the image read start position (Y direction, main scanning direction) matches the reference point on the copyboard glass. • Unit: Pixel • Follow the instructions on the next page.	Settings: –100~+100 (–2.5~+2.5mm) Unit= 0.06mm (approx.)
ADJ-S (Note 1)	Use it to fine-adjust the point at which the standard white plate is measured for shading correction data. • Unit: Number of steps of the stepping motor. • Scratches or dirt, if any, on the standard white plate can cause conspicuous vertical white lines on copies. If such is noted, shift the point of measurement using 'ADJ-S'.  + (forward) Point of measurement Standard white plate	Settings: 0~45 (0~4.8mm) Unit= 0.11mm (approx.)
ADJ-J (Note 1)	Adjusts the preparatory time for the scanner motor.	Settings: 450~550 Unit= 0.1msec (approx.)

Note 1:
You must enter the appropriate value whenever you have replaced a PCB or initialized a RAM; record any new values on the service label for this purpose.

■ Adjusting the Image Read Start Position

You must check the point of retention (FUNC> ATTRACT) before making the following adjustments:

1) Before starting service mode, turn OFF the original detection mechanism.
2) Select the <ADJ-XY> screen, and press the Start key.
- The appropriate copying modes will be set automatically, and a copy will be made with a shift of about 20 mm as shown in Figure 7-704.
3) If any part of the image is missing, decrease the values of 'ADJ-X' and 'ADJ-Y'.
4) If an area outside the image is copied, increase the values of 'ADJ-X' and 'ADJ-Y'.

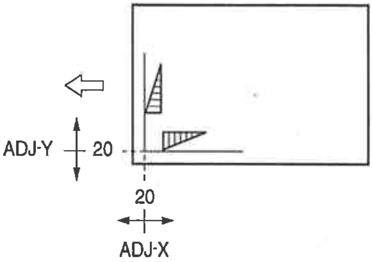
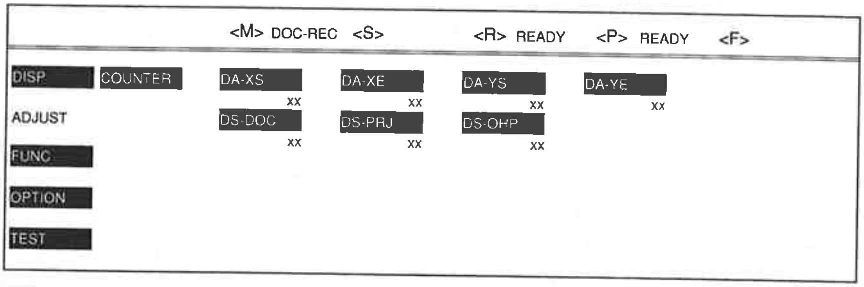
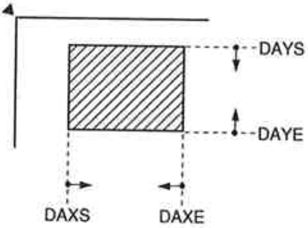


Figure 7-704

2. DOC-REC (original detection area/slice level)

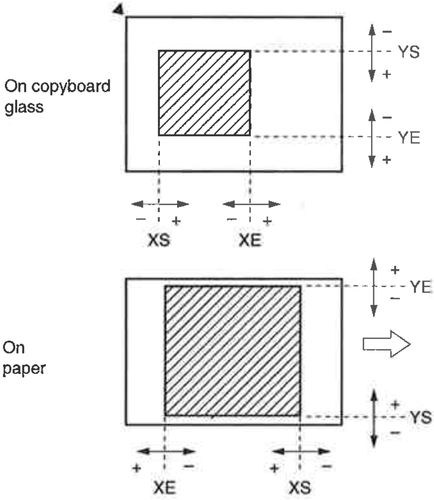


Item	Description	Remarks
DA-XS DA-XE DA-YS DA-YE (Note 1)	Fine-adjusts the original detection area. The original must be placed correctly on the copyboard glass in original detection mode; if placed at an angle, the copies will have a black frame. To prevent the problem, set a value by which such frames will be erased.  Any changes to the value will affect the frame erasing width in original detection mode when the projector is used.	Settings: –99~99 (0~6.3mm) Reference: XS=16 XE=16 YS=16 YE=16 Unit=0.06mm (approx.)
DS-DOC DS-PRJ DS-OHP (Note 1)	Adjusts the slice level for original detection. You may enter any value as the slice level for original detection. A higher value increases detection capability but tends to lead to wrong detection. DS-DOC:When detecting ordinary originals, DS-PRJ:When detecting the projection area with the projector in use, DS-OHP:When detecting film (6x6, 8x10) placed on the copyboard glass with the projector in use from the position of the reference sheet.	Settings: 0~31 (Density level 0~248) Reference: DS-DOC=20 PRJ=28 OHP=22

Note 1:
The value will return to the standard value when the RAM is initialized, requiring re-input. Be sure to record any new value on the service label.

3. PROJ (projector area adjustment)

		<M> PROJ	<S>	<R> READY	<P> READY	<F>
DISP	COUNTER	PJRD-XS xxxx	PJRD-XE xxxx	PJRD-YS xxxx	PJRD-YE xxxx	
ADJUST		PJDA-XS xxxx	PJDA-XE xxxx	PJDA-YS xxxx	PJDA-YE xxxx	
FUNC		PJCAR-X xxxx	PJCAR-Y xxxx			
OPTION						
TEST						

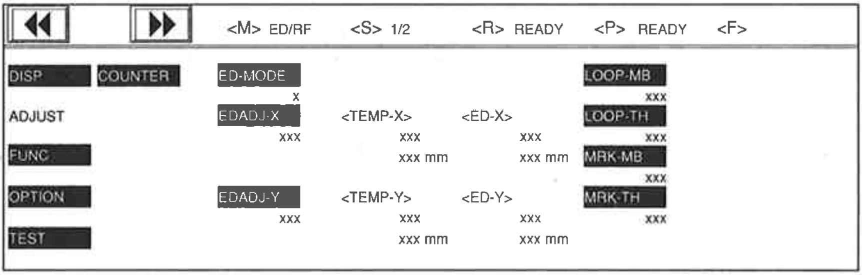
Item	Description	Remarks
PJRD-XS PJRD-XE PJRD-YS PJRD-YE	Fine-adjusts the read area if original detection mechanism is off with the projector in use or if original detection fails when the original detection mechanism is on.  On copyboard glass – YS + – YE + – + XS – + XE On paper + YE – + YS – + – XE + – XS	Settings: –300~+300 (–19.0~+19.0mm) Ref. =0 For XS/XE, Unit= 0.11 mm (approx.) For YS/YE, Unit= 0.06 mm (approx.)

Item	Description	Remarks
PJDA-XS PJDA-XE PJDA-YS PJDA-YE	Fine-adjusts the area from which measurements are taken for original detection when the original detection mechanism is on with the projector in use. • Use it also for the read area when the original detection mechanism is off in copyboard mode. • The area for the standard value (0) is 5 mm inside the Fresnel lens.	Settings: –99~+99 YS, YE (–6.3~+6.3mm) Unit: 0.06mm (approx.) XS, XE (–10.9~+10.9mm) Unit: 0.11mm (approx.) (on copyboard glass) Standard: 0
PJCAR-X PJCAR-Y	Use it to adjust the film reading range when the original detection mechanism is off with the auto changer in use.	Settings: –100 to 100 Standard: 0

REF.

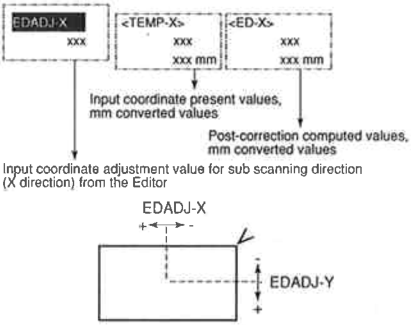
PJDA affects the area from which measurements are taken not the area from which measurements have been taken. To erase the black frames on copies or decrease the width of such frames, adjust YE of DA-XS under DOC-REC.

4. ED/RDF (editor/RDF adjustment)



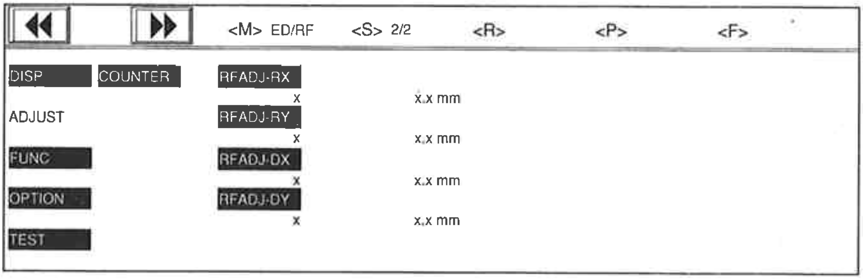
<M> ED/RF <S> 1/2 <R> READY <P> READY <F>

DISP COUNTER ED-MODE LOOP-MB
x xxx
ADJUST EDADJ-X <TEMP-X> <ED-X> LOOP-TH
xxx xxx xxx xxx
FUNC xxx mm xxx mm MRK-MB
xxx
OPTION EDADJ-Y <TEMP-Y> <ED-Y> MRK-TH
xxx xxx xxx xxx
TEST xxx mm xxx mm

Item	Description	Remarks
ED-MODE (Note 1)	Switches editor operation mode. 0: Normal operation 1: 1-point input check 2: Continuous input check	Standard: 0
EDADJ-X <TEMP-X> <ED-X> EDADJ-Y <TEMP-Y> <ED-Y> (Note 1)	 EDADJ-X xxx <TEMP-X> xxx xxx mm <ED-X> xxx xxx mm EDADJ-X + - EDADJ-Y - + Input coordinate present values, mm converted values Post-correction computed values, mm converted values Input coordinate adjustment value for sub scanning direction (X direction) from the Editor	Settings: –99~+99 (–12.6~+12.6mm) Unit= 0.13mm (approx.) Reference: 0
LOOP-MB (Note 1)	Changes the processing method used to read images into memory for coloring in area specification/color creation. If the value is increased, filling gaps will be easier; too high a value, however, will result in bleeding.	Settings: 0~3 Standard: 0
LOOP-TH (Note 1)	If the slice level adjustment value is increased for binarization used for reading images into memory for area specification/color creation, finer lines may be read.	Settings: 0~255 Standard: 192

Item	Description	Remarks
MRK-MB (Note 1)	Changes the image data processing method used for reading images into memory for freehand/point specification. If the value is increased, filling gaps will be easier.	Settings: 0~3 Standard: 0
MRK-TH (Note 1)	Adjusts the slice level for binarization used for reading images into memory for freehand/point specification. If the value is increased, finer lines may be read.	Settings: 0~255 Standard: 128

Note 1:
You must enter the appropriate value whenever you have replaced a PCB or initialized a RAM; record any new values on the service label for this purpose.



<M> ED/RF <S> 2/2 <R> <P> <F>

DISP COUNTER

ADJUST

FUNC

OPTION

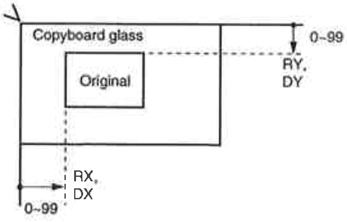
TEST

RFADJ-RX x x.x mm

RFADJ-RY x x.x mm

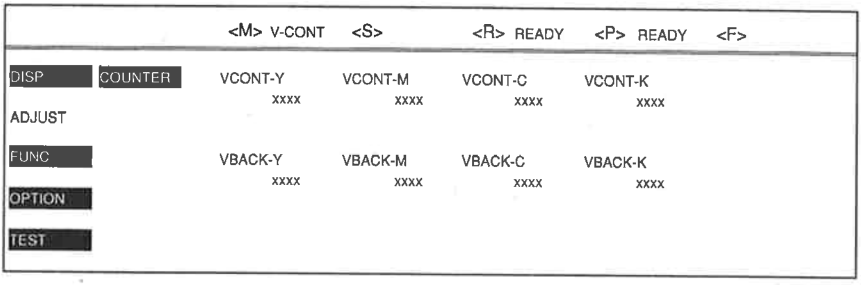
RFADJ-DX x x.x mm

RFADJ-DY x x.x mm

Item	Description	Remarks
RFADJ-RX RFADJ-RY RFADJ-DX RFADJ-DY (Note 1)	Adjusts registration (with RDF in use). Corrects registration when originals are picked up from the RDF. Corrects in relation to main scanning direction→CCD read start position. Corrects in relation to sub scanning direction→original read start timing. RX → For correction in sub scanning direction when pick-up is from the RDF tray. RY → For correction in main scanning direction when pick-up is from the RDF tray. If RY=0 (initial value), the CCD starts reading at a point 2 mm away from the index for A4 and 11 mm away from the index for LTR. DX → For correction in sub scanning direction when pick-up is from the manual feeding tray (feeding assembly). DY → For correction in main scanning direction when pick-up is from the manual feeding tray (feeding assembly).  Copyboard glass Original 0~99 RY, DY RX, DX 0~99	Settings: 0~99 Unit: RX, DX=0.11mm (approx.) RY, DY=0.06mm (approx.) Initial value RX, DX=0 RY, DY=0 For this mode, you must have finished: 1. Adjusting the original stop position and 2. Adjusting the horizontal registration.

Note 1:
You must enter the appropriate value whenever you have replaced a PCB or initialized a RAM; record any new values on the service label for this purpose.

5. V-CONT (photosensitive drum surface potential contrast adjustment)



<M> V-CONT <S> <R> READY <P> READY <F>

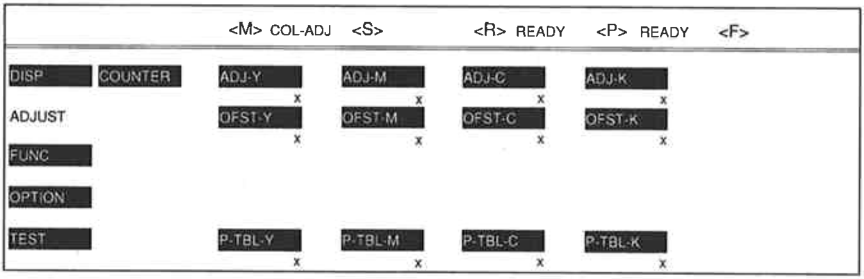
DISP COUNTER
ADJUST
FUNC
OPTION
TEST

VCONT-Y xxxx
VCONT-M xxxx
VCONT-C xxxx
VCONT-K xxxx

VBACK-Y xxxx
VBACK-M xxxx
VBACK-C xxxx
VBACK-K xxxx

Item	Description	Remarks
VCONT-Y/M/C/K	Indicates the present value of the target contrast potential.	
VBACK-Y/M/C/K	Indicates the present value of de-fogging potential.	

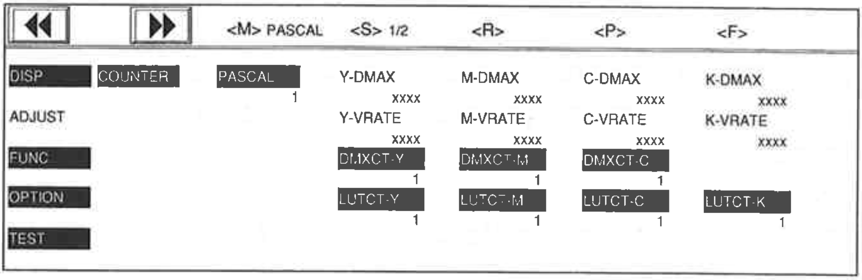
6. COL-ADJ (user color balance adjustment correction)



Item	Description	Remarks
ADJ-Y/M/C/K (Note 1)	Corrects user color balance adjustment. • Be sure to set the setting for user color balance adjustment to 0 before using this mode. • Follow the image adjustment basic procedure.	Settings: –8~+8 Standard: 0 +: Darker. –: Lighter
OFST-Y/M/C/K (Note 1)	Adjusts light area density and color balance. • Follow the image adjustment basic procedure. • If fogging is noted, increase the value. • To increase reproducibility of images with extremely low density, decrease the setting.	Settings: –16~+16 Standard: Y=0 M=0 C=0 K=0
P-TBL- M C Y K	Use it to make fine adjustments so that the hues will be closer to the hues of offset printing. After comparing M/C/Y/K outputs against professionally (offset) printed material, if the print-out is lighter, increase the setting of 'P-TBL-M/C/Y/K'. if the print-out is darker, decrease the setting of 'P-TBL-M/C/Y/K'.	Settings: –3 to + 3 Standard: 0 See the descriptions under 'OPTION> R-OPT>MANAGE'.
MASK-M	Gray Hue Correction Mode If greenish or bluish, increase the setting. If magenta is too strong, decrease the setting.	Standard:0 Settings:–6 to +6 REF. Effective only if the CCD sensor of the new type is used.

Note 1:
You must enter the appropriate value whenever you have replaced a PCB or initialized a RAM; record any new values on the service label for this purpose.

7. PASCAL (auto gradation correction control)



<M> PASCAL <S> 1/2 <R> <P> <F>

DISP COUNTER

ADJUST

FUNC

OPTION

TEST

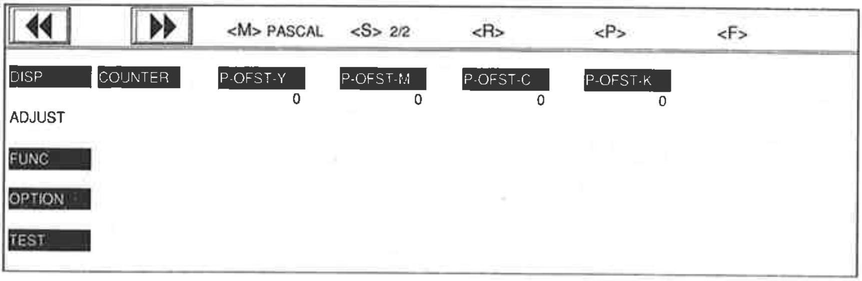
PASCAL 1

Y-DMAX xxxx M-DMAX xxxx C-DMAX xxxx K-DMAX xxxx

Y-VRATE xxxx M-VRATE xxxx C-VRATE xxxx K-VRATE xxxx

DMXCT-Y 1 DMXCT-M 1 DMXCT-C 1

LUTCT-Y 1 LUTCT-M 1 LUTCT-C 1 LUTCT-K 1



<M> PASCAL <S> 2/2 <R> <P> <F>

DISP COUNTER

ADJUST

FUNC

OPTION

TEST

P-OFST-Y 0 P-OFST-M 0 P-OFST-C 0 P-OFST-K 0

Item	Description	Remarks
PASCAL	Determines whether to use or not data on gradation correction and contrast potential obtained by auto gradation correction control. 0: Do not use 1: Use	Set it to 0 when adjusting images; otherwise, be sure to set it to 1. Standard: 1
M/C/Y/K-DMAX	Indicates in % the result of comparing the solid black density read when auto gradation correction is executed against the design value.	Optimum value: 75 or higher
M/C/Y/K-VRATE	Indicates the control value (obtained from M/Y/K-DMAX) used to determine contrast potential.	

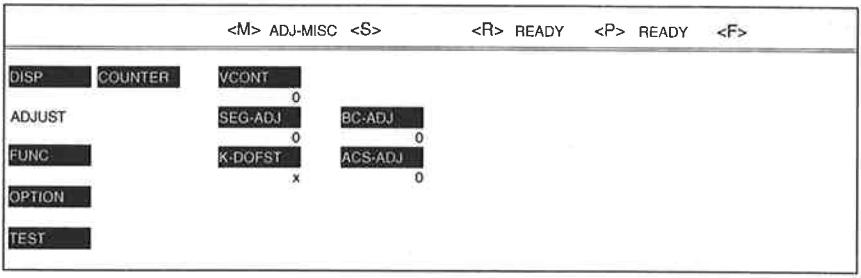
Item	Description	Remarks
DMXCT-Y/M/C	Use it to specify whether to use the solid density control data for each color obtained (auto gradation correction control). 0: Do not use. 1: Use.	Standard: 1
LUTCT-Y/M/C/K	Use it to specify whether to use the gradation correction control data of each color (auto gradation correction control). 0: Do not use. 1: Use.	Standard: 1
P-OFST-Y/M/C/K	Use it to set data for correction of the target value for high-density areas in auto gradation correction mode (i.e., to correct variation of CCD readings). **NOTE :** You must enter the value recorded on the service label once again if you have initialized the RAM on the DC controller PCB, since initialization returns it to the standard value.	Set to optimum value at time of shipment. (recorded on the service label) Standard: 0 Settings: –20 to +20 +: Darker –: Lighter

REF.

- If the value of M-, C-, Y-, or K-DMAX is lower than 75, a fault may be assumed in the development process of the color in question.
- If all values of M-, C-, Y-, and K-DMAX are lower than 75, a fault may be assumed in transfer process or fixing process.
- If the value of M-, C-, Y-, or K-DMAX is 120 or higher and copies have fogging, a fault is assumed in control toner dencity of the color in question.

If you have changed the setting of 'PASCAL', 'DMXCT-T/M/C', 'LUTCT-Y/M/C/K', or 'P-OFST-Y/M/C/K', be sure to execute auto gradation in user mode.

8. ADJ-MISC

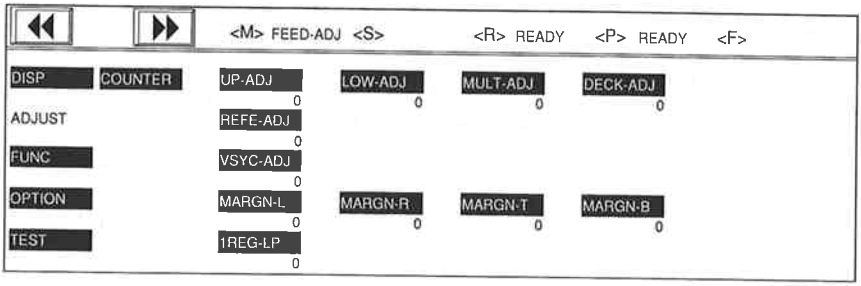


<table>
<tr><th>Item</th><th>Description</th><th>Remarks</th></tr>
<tr><td>VCONT</td><td>Switches between auto and manual for target contrast potential (VG, VDC).
0: Auto (set by auto gradation correction control)
1~8: Manual
<table>
<tr><th></th><th>Y Vcont</th><th>M Vcont</th><th>C Vcont</th><th>K Vcont</th></tr>
<tr><td>1</td><td>390.00</td><td>365.000</td><td>370.00</td><td>420.00</td></tr>
<tr><td>2</td><td>390.00</td><td>365.00</td><td>370.00</td><td>420.00</td></tr>
<tr><td>3</td><td>390.00</td><td>365.00</td><td>370.00</td><td>420.00</td></tr>
<tr><td>4</td><td>370.00</td><td>345.00</td><td>355.00</td><td>410.00</td></tr>
<tr><td>5</td><td>340.00</td><td>325.00</td><td>335.00</td><td>390.00</td></tr>
<tr><td>6</td><td>310.00</td><td>295.00</td><td>315.00</td><td>380.00</td></tr>
<tr><td>7</td><td>295.00</td><td>275.00</td><td>290.00</td><td>370.00</td></tr>
<tr><td>8</td><td>245.00</td><td>225.00</td><td>225.00</td><td>330.00</td></tr>
<tr><td>9</td><td>xxxV</td><td>xxxV</td><td>xxxV</td><td>xxxV</td></tr>
<tr><td>10</td><td>xxxV</td><td>xxxV</td><td>xxxV</td><td>xxxV</td></tr>
<tr><td>11</td><td>xxxV</td><td>xxxV</td><td>xxxV</td><td>xxxV</td></tr>
<tr><td>12</td><td>xxxV</td><td>xxxV</td><td>xxxV</td><td>xxxV</td></tr>
</table>
</td><td>1~8 are used for checks; normally, set it to 0 after a check.
9~12 are not used. (for factory)</td></tr>
<tr><td>SEG-ADJ (Note 1)</td><td>Fine-adjusts the separation level between text and photo in text/photo mode or text/halide mode.
+: Identifies photos better.
–: Identifies text better.
This mode corrects text/photo setting of user mode.</td><td>Settings: –3~+3
Standard: 0</td></tr>
<tr><td>BC-ADJ (Note 1)</td><td>Use it to correct the black text correction/ACS level. A higher setting makes black text darker in 4-color text photo mode. For ACS evaluation, black will be identified more readily.</td><td>Settings: –3~+3
Standard: 0</td></tr>
<tr><td>K-DOFST (Note 1)</td><td>Use it to correct the target value of the SALT signal. If fogging is noted only for Bk, increase the setting to suppress.</td><td>Settings: –8 to 0
Standard: 0</td></tr>
</table>

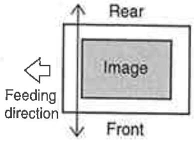
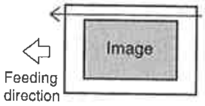
Item	Description	Remarks
ACS-ADJ	ACS identification Level Adjustment Mode A higher setting will increase the area in which color is identified as being non-chromatic. A lower setting will increase the area in which color is identified as being chromatic.	Standard: –2 (w/new type CCD) Standard: 0 (w/old type CCD) –6 to +6

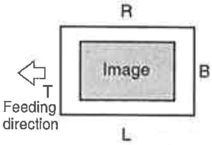
Note 1:
The value will return to the standard value when the RAM is initialized, requiring re-input. Be sure to record any new value on the service label.

9. FEED-ADJ (image position adjustment)

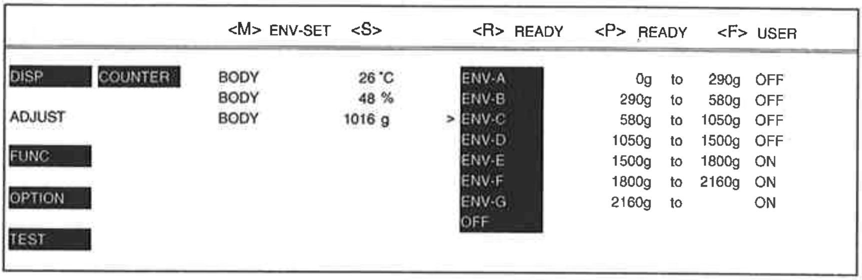


UP-ADJ 0
LOW-ADJ 0
MULT-ADJ 0
DECK-ADJ 0
REFE-ADJ 0
VSYC-ADJ 0
MARGN-L 0
MARGN-R 0
MARGN-T 0
MARGN-B 0
1REG-LP 0

Item	Description	Remarks
UP-ADJ	Adjusts the image write start position in main scanning direction when pick-up is from the upper cassette.	A higher value leads to a movement to the rear.  Unit= 0.11 mm Standard: 128 Settings: 0 to 255
LOW-ADJ	Adjusts the image write start position in main scanning direction when pick-up is from the lower cassette.	
MULT-ADJ	Adjusts the image write position in main scanning direction when pick-up is from the multifeeder.	
DECK-ADJ (only if deck is connected)	Adjusts the image write start position in main scanning direction when pick-up is from the paper deck.	
REFE-ADJ	Adjusts the image write start position in main scanning direction for re-pick up operation.	
VSYC-ADJ	Adjusts the image write start position in sub scanning direction.	A higher value leads to a movement to the trailing edge.  Unit= 0.11 mm Standard: 128 Settings: 0 to 255

Item	Description	Remarks
MARGN-L	Adjusts the non-image width along the front of the images.	A higher value increases the non-image width.  Unit= 0.062 mm Standard: L=32 R=32 T=40 B=40 Settings: 0 to 255
MARGN-R	Adjusts the non-image width along the rear of the images.	
MARGN-T	Adjusts the non-image width along the leading edge of the images.	
MARGN-B	Adjusts the non-image width along the trailing edge of the images.	
IREG-LP	Use it to adjust the degree of arching paper at the rear of the registration roller (paper stop timing). • A higher setting will increase the arching. • Too low a setting can cause skew movement.	Unit: 0 Standard value: 0 Settings: 6 to +6
D-FD-ADJ	Adjusting the Pickup Timing with LTR Selected for the Paper Deck (adding the OFF timing of the pickup clutch) If a discrepancy occurs along the leading edge margin among LTR sheets, change the setting from '0' to '4'.	Standard:0 Settings:–12 to +12

10. ENV-SET (setting operation conditions for the cassette heater)

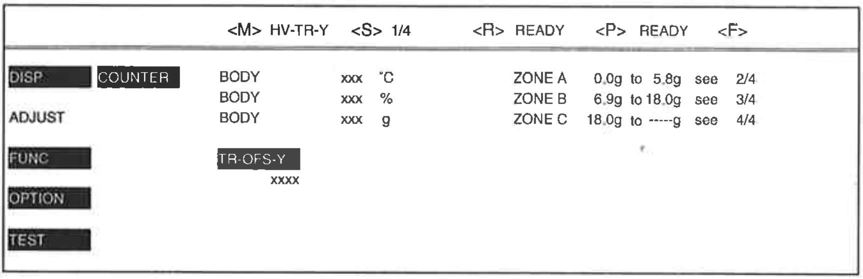


```
                    <M> ENV-SET   <S>        <R> READY   <P> READY    <F> USER

DISP    COUNTER     BODY          26 °C        ENV-A          0g   to   290g   OFF
                    BODY          48 %         ENV-B        290g   to   580g   OFF
ADJUST              BODY        1016 g       > ENV-C        580g   to  1050g   OFF
                                               ENV-D       1050g   to  1500g   OFF
FUNC                                           ENV-E       1500g   to  1800g   ON
                                               ENV-F       1800g   to  2160g   ON
OPTION                                         ENV-G       2160g   to          ON
                                               OFF
TEST
```

Item	Description	Remarks
BODY °C	Indicates the machine internal temperature measured by the environment sensor.	Same as the reading under 'DISPLAY' > 'ANALOG'.
BODY %	Indicates the machine internal humidity measured by the environment sensor.	
BODY g	Indicates the machine internal humidity absolute value (g) measured by the environment sensor.	
>	Indicates the present environment.	
ENV-A~G	Sets ON/OFF of the cassette heater.	The heater will turn on if the internal humidity absolute value exceeds the setting.
OFF	Sets to OFF for all environment.	

The settings of 'ENV-SET' are stored as soon as the CPU on the DC controller PCB is supplied with power (i.e., when the power plug is connected to the power outlet), and will be renewed every 8 hr.

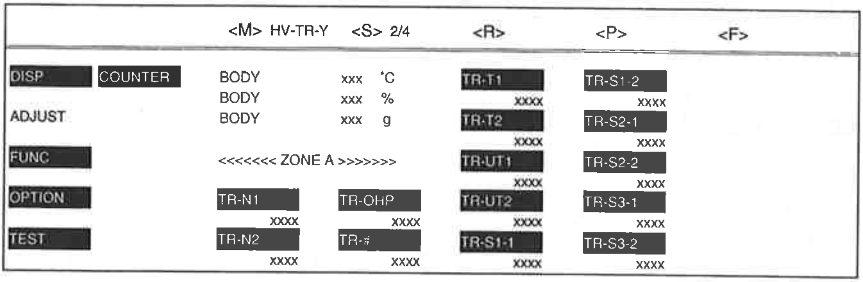
11. HV-TR (transfer high-voltage output adjustment by condition)



```
                      <M> HV-TR-Y   <S> 1/4        <R> READY    <P> READY    <F>

DISP      COUNTER     BODY          xxx  °C        ZONE A    0.0g to  5.8g  see  2/4
                      BODY          xxx  %         ZONE B    6.9g to 18.0g  see  3/4
ADJUST                BODY          xxx  g         ZONE C   18.0g to -----g see  4/4

FUNC                  TR-OFS-Y
                          xxxx
OPTION

TEST
```

Item	Description	Remarks
BODY °C	Indicates the machine internal temperature measured by the environment sensor.	Same as the reading under 'DISPLAY > ANA-LOG'.
BODY %	Indicates the machine internal humidity measured by the environment sensor.	
BODY g	Indicates the machine internal humidity absolute value (g) measured by the environment sensor.	
TRY-OFS-Y/M/C/K	Adjusts the transfer high-voltage output.	Settings: –5 to +5 Unit = 1.0 μA Standard: 0 If you have changed the settings of 'TRY-OFS-Y/M/C/K', check to make sure that the value of 'TR-#' for each zone is '0'; otherwise, enter '0'.
ZONE-A/B/C	Indicates the machine internal humidity absolute value (g) in the three ranges of A through C.	

NOTE 1:
The setting of this item will return to the default value when the PCB is replaced or the RAM is cleared, requiring input once again. Be sure to record any new setting you have made on the service label.



```
                        <M> HV-TR-Y   <S> 2/4          <R>              <P>              <F>

DISP      COUNTER       BODY        xxx  ˚C            TR-T1            TR-S1-2
                        BODY        xxx  %                  xxxx             xxxx
ADJUST                  BODY        xxx  g             TR-T2            TR-S2-1
                                                            xxxx             xxxx
FUNC                    <<<<<<< ZONE A >>>>>>>         TR-UT1           TR-S2-2
                                                            xxxx             xxxx
OPTION                  TR-N1           TR-OHP         TR-UT2           TR-S3-1
                             xxxx            xxxx           xxxx             xxxx
TEST                    TR-N2           TR-#           TR-S1-1          TR-S3-2
                             xxxx            xxxx           xxxx             xxxx
```

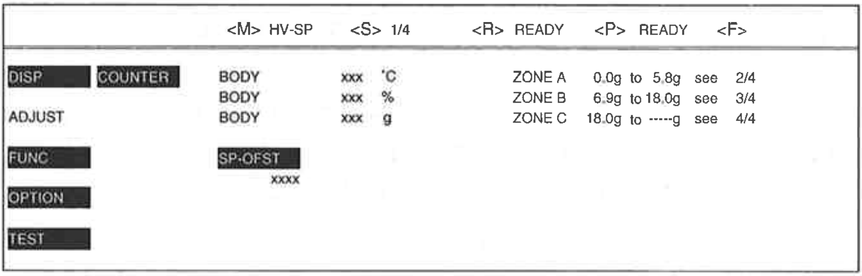
Item	Description	Remarks
BODY °C	Indicates the machine internal temperature measured by the environment sensor.	Same as the reading under 'DISPLAY' > 'ANALOG'.
BODY %	Indicates the machine internal humidity measured by the environment sensor.	
BODY g	Indicates the machine internal humidity absolute value (g) measured by the environment sensor.	
<<<ZONE-A>>>	Indicates the zone in which the setting shown is effective.	
TR-N1	Effective in plain paper mode and, in addition, when copying on a one-sided copy or on the 1st side of a two-sided copy.	Settings: –5 to +5 Unit = 1.0 µA Standard: 0
TR-N2	Effective in plain paper mode and, in addition, when copying on the 2nd side of a two-sided copy.	
TR-OHP	Effective in OHP mode.	
TR-#	Effective during image position correction control.	
TR-T1	Effective in thick paper mode and, in addition, copying on a one-sided copy or on the 1st side of a two-sided copy.	
TR-T2	Effective in thick paper mode and, in addition, copying on the 2nd side of a two-sided copy.	
TR-UT1	Effective in extra thick paper mode and, in addition, when copying on the 1st side of a two-sided copy.	
TR-UT2	Effective in extra thick paper mode and, in addition, when copying on the 2nd side of a two-sided copy.	
TR-S1-1	Effective in special paper 1 mode and, in addition, when copying on a one-sided copy or on the 1st side of a two-sided copy.	
TR-S1-2	Effective in special paper 1 mode and, in addition, when copying on the 2nd side of a two-sided copy.	
TR-S2-1	Effective in special paper 2 mode and, in addition, when copying on a one-sided copy.	
TR-S2-2	Effective in special paper 2 mode and, in addition, when copying on the 2nd side of a two-sided copy.	
TR-S3-1	Effective in thin paper and, in addition, when copying on a one-sided copy or on the 1st side of a two-sided copy.	
TR-S3-2	Effective in thin paper and, in addition, when copying on the 2nd side of a two-sided copy.	

The setting of this item will return to the default value when the PCB is replaced or the RAM is cleared, requiring input once again. Be sure to record any new setting you have made on the service label.

REF.

This mode will prove effective when correcting transfer faults under each item in question.

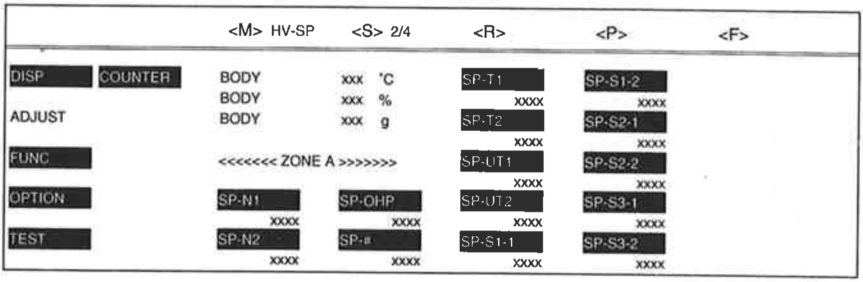
12. HV-SP (separation high-voltage output fine-adjustment by condition)



```
                              <M> HV-SP     <S> 1/4        <R> READY    <P> READY     <F>

DISP      COUNTER             BODY          xxx  'C            ZONE A    0.0g  to  5.8g   see   2/4
                              BODY          xxx  %             ZONE B    6.9g  to 18.0g   see   3/4
ADJUST                        BODY          xxx  g             ZONE C   18.0g  to -----g  see   4/4

FUNC                          SP-OFST
                                   xxxx
OPTION

TEST
```

Item	Description	Remarks
BODY °C	Indicates the machine internal temperature measured by the environment sensor.	Same as the reading under 'DISPLAY > ANALOG'.
BODY %	Indicates the machine internal humidity measured by the environment sensor.	
BODY g	Indicates the machine internal humidity absolute value (g) measured by the environment sensor.	
SP-OFST (NOTE 1)	Adjusts the transfer high-voltage output.	Settings: –5 to +5 Unit = 25 µA Standard: 0
ZONE-A/B/C	Indicates the machine internal humidity absolute value (g) in the three ranges of A through C.	

Note 1:
The setting of this item will return to the default value when the PCB is replaced or the RAM is cleared, requiring input once again. Be sure to record any new setting you have made on the service label.



```
<M> HV-SP     <S> 2/4      <R>          <P>          <F>

DISP  COUNTER   BODY        xxx 'C    SP-T1        SP-S1-2
                BODY        xxx %           xxxx         xxxx
ADJUST          BODY        xxx g     SP-T2        SP-S2-1
                                            xxxx         xxxx
FUNC            <<<<<<< ZONE A >>>>>>> SP-UT1       SP-S2-2
                                            xxxx         xxxx
OPTION          SP-N1       SP-OHP    SP-UT2       SP-S3-1
                     xxxx        xxxx       xxxx         xxxx
TEST            SP-N2       SP-#      SP-S1-1      SP-S3-2
                     xxxx        xxxx       xxxx         xxxx
```

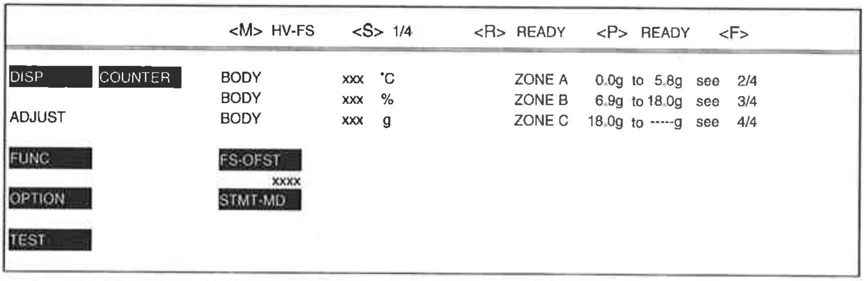
Item	Description	Remarks
BODY °C	Indicates the machine internal temperature measured by the environment sensor.	Same as the reading under 'DISPLAY > ANALOG'.
BODY %	Indicates the machine internal humidity measured by the environment sensor.	
BODY g	Indicates the machine internal humidity absolute value (g) measured by the environment sensor.	
<<<ZONE-A>>>	Indicates the zone in which the setting shown is effective.	
SP-N1	Effective in plain paper mode and, in addition, when copying on a one-sided copy or on the 1st side of a two-sided copy.	Settings: –5 to +5 Unit = 25 μA Standard: 0
SP-N2	Effective in plain paper mode and, in addition, when copying on the 2nd side of a two-sided copy.	
SP-OHP	Effective in OHP mode.	
SP-#	Effective during image position correction control.	
SP-T1	Effective in thick paper mode and, in addition, copying on a one-sided copy or on the 1st side of a two-sided copy.	
SP-T2	Effective in thick paper mode and, in addition, copying on the 2nd side of a two-sided copy.	
SP-UT1	Effective in extra thick paper mode and, in addition, when copying on the 1st side of a two-sided copy.	
SP-UT2	Effective in extra thick paper mode and, in addition, when copying on the 2nd side of a two-sided copy.	
SP-S1-1	Effective in special paper 1 mode and, in addition, when copying on a one-sided copy or on the 1st side of a two-sided copy.	
SP-S1-2	Effective in special paper 1 mode and, in addition, when copying on the 2nd side of a two-sided copy.	
SP-S2-1	Effective in special paper 2 mode and, in addition, when copying on a one-sided copy.	
SP-S2-2	Effective in special paper 2 mode and, in addition, when copying on the 2nd side of a two-sided copy.	
SP-S3-1	Effective in thin paper and, in addition, when copying on a one-sided copy or on the 1st side of a two-sided copy.	
SP-S3-2	Effective in thin paper and, in addition, when copying on the 2nd side of a two-sided copy.	

The setting of this item will return to the default value when the PCB is replaced or the RAM is cleared, requiring input once again. Be sure to record any new setting you have made on the service label.

REF. This mode will prove effective when correcting image distortion, separation faults, or feeding faults under each item in question.

---

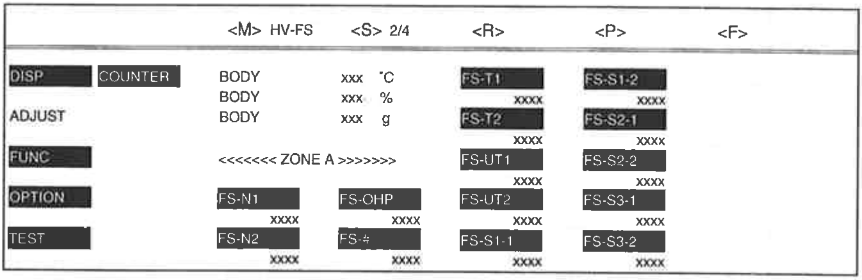
13. HV-FS (fine-adjustment for pre-fixing high-voltage output according to conditions)



```
                          <M> HV-FS      <S> 1/4          <R> READY      <P> READY      <F>

DISP      COUNTER         BODY           xxx  °C               ZONE A    0.0g  to  5.8g   see   2/4
                          BODY           xxx  %                ZONE B    6.9g  to 18.0g   see   3/4
ADJUST                    BODY           xxx  g                ZONE C   18.0g  to -----g  see   4/4

FUNC                      FS-OFST
                                  xxxx
OPTION                    STMT-MD

TEST
```

Item	Description	Remarks
BODY °C	Indicates the machine internal temperature measured by the environment sensor.	Same as the reading under 'DISPLAY' > 'ANALOG'.
BODY %	Indicates the machine internal humidity measured by the environment sensor.	
BODY g	Indicates the machine internal humidity absolute value (g) measured by the environment sensor.	
FS-OFST (NOTE 1)	Adjusts the transfer high-voltage output.	Settings: –5 to +5 Unit = 25 µA Standard: 0
ZONE-A/B/C	Indicates the machine internal humidity absolute value (g) in the three ranges of A through C.	
STMT-MD	A higher setting can be effective in preventing stray toner from images before fixing.	Standard: 0 Settings: –1 to +9

Note 1:
The setting of this item will return to the default value when the PCB is replaced or the RAM is cleared, requiring input once again. Be sure to record any new setting you have made on the service label.



```
              <M> HV-FS     <S> 2/4       <R>          <P>          <F>

DISP  COUNTER  BODY          xxx  °C      FS-T1        FS-S1-2
               BODY          xxx  %            xxxx         xxxx
ADJUST         BODY          xxx  g       FS-T2        FS-S2-1
                                               xxxx         xxxx
FUNC           <<<<<<< ZONE A >>>>>>>     FS-UT1       FS-S2-2
                                               xxxx         xxxx
OPTION         FS-N1         FS-OHP       FS-UT2       FS-S3-1
                    xxxx          xxxx         xxxx         xxxx
TEST           FS-N2         FS-#         FS-S1-1      FS-S3-2
                    xxxx          xxxx         xxxx         xxxx
```

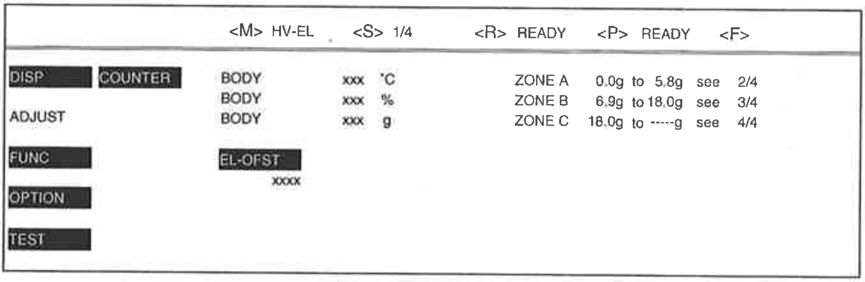
Item	Description	Remarks
BODY °C	Indicates the machine internal temperature measured by the environment sensor.	Same as the reading under 'DISPLAY' > 'ANALOG'.
BODY %	Indicates the machine internal humidity measured by the environment sensor.	
BODY g	Indicates the machine internal humidity absolute value (g) measured by the environment sensor.	
<<<ZONE-A>>>	Indicates the zone in which the setting shown is effective.	
FS-N1	Effective in plain paper mode and, in addition, when copying on a one-sided copy or on the 1st side of a two-sided copy.	Settings: –5 to +5 Unit = 25 µA Standard: 0
FS-N2	Effective in plain paper mode and, in addition, when copying on the 2nd side of a two-sided copy.	
FS-OHP	Effective in OHP mode.	
FS-#	Effective during image position correction control.	
FS-T1	Effective in thick paper mode and, in addition, copying on a one-sided copy or on the 1st side of a two-sided copy.	
FS-T2	Effective in thick paper mode and, in addition, copying on the 2nd side of a two-sided copy.	
FS-UT1	Effective in extra thick paper mode and, in addition, when copying on the 1st side of a two-sided copy.	
FS-UT2	Effective in extra thick paper mode and, in addition, when copying on the 2nd side of a two-sided copy.	
FS-S1-1	Effective in special paper 1 mode and, in addition, when copying on a one-sided copy or on the 1st side of a two-sided copy.	
FS-S1-2	Effective in special paper 1 mode and, in addition, when copying on the 2nd side of a two-sided copy.	
FS-S2-1	Effective in special paper 2 mode and, in addition, when copying on a one-sided copy.	
FS-S2-2	Effective in special paper 2 mode and, in addition, when copying on the 2nd side of a two-sided copy.	
FS-S3-1	Effective in thin paper and, in addition, when copying on a one-sided copy or on the 1st side of a two-sided copy.	
FS-S3-2	Effective in thin paper and, in addition, when copying on the 2nd side of a two-sided copy.	

The setting of this item will return to the default value when the PCB is replaced or the RAM is cleared, requiring input once again. Be sure to record any new setting you have made on the service label.

REF.

This mode will prove effective when correcting image distortion under each item in question.

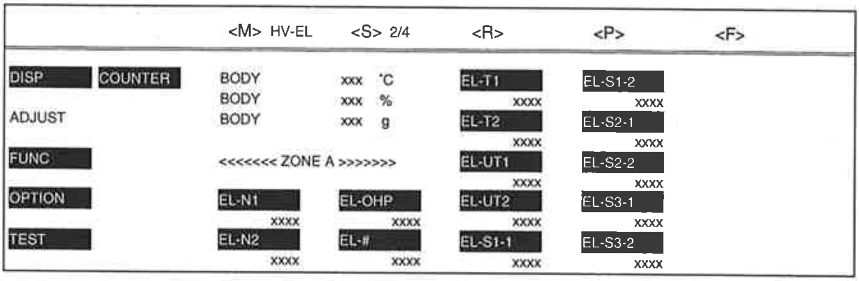
14. HV-EL (fine-adjustment for internal static eliminator high-voltage output according to conditions)



```
                   <M> HV-EL     <S> 1/4       <R> READY    <P> READY    <F>
DISP    COUNTER    BODY          xxx  °C       ZONE A   0.0g to  5.8g  see  2/4
                   BODY          xxx  %        ZONE B   6.9g to 18.0g  see  3/4
ADJUST             BODY          xxx  g        ZONE C  18.0g to -----g see  4/4

FUNC               EL-OFST
                       xxxx
OPTION

TEST
```

Item	Description	Remarks
BODY °C	Indicates the machine internal temperature measured by the environment sensor.	Same as the reading under 'DISPLAY > ANALOG'.
BODY %	Indicates the machine internal humidity measured by the environment sensor.	
BODY g	Indicates the machine internal humidity absolute value (g) measured by the environment sensor.	
EL-OFST (NOTE 1)	Adjusts the transfer high-voltage output.	Settings: –3 to +1 Unit= 0.5 kV Standard: 0
ZONE A/B/C	Indicates the machine internal humidity absolute value (g) in the three ranges of A through C.	

Note 1:
The setting of this item will return to the default value when the PCB is replaced or the RAM is cleared, requiring input once again. Be sure to record any new setting you have made on the service label.



```
                    <M> HV-EL      <S> 2/4        <R>           <P>           <F>
DISP     COUNTER    BODY           xxx  'C        EL-T1         EL-S1-2
                    BODY           xxx  %            xxxx          xxxx
ADJUST              BODY           xxx  g         EL-T2         EL-S2-1
                                                     xxxx          xxxx
FUNC                <<<<<<< ZONE A >>>>>>>        EL-UT1        EL-S2-2
                                                     xxxx          xxxx
OPTION              EL-N1          EL-OHP         EL-UT2        EL-S3-1
                       xxxx           xxxx           xxxx          xxxx
TEST                EL-N2          EL-#           EL-S1-1       EL-S3-2
                       xxxx           xxxx           xxxx          xxxx
```

Item	Description	Remarks
BODY °C	Indicates the machine internal temperature measured by the environment sensor.	Same as the reading under 'DISPLAY > ANALOG'.
BODY %	Indicates the machine internal humidity measured by the environment sensor.	
BODY g	Indicates the machine internal humidity absolute value (g) measured by the environment sensor.	
<<<ZONE-A>>>	Indicates the zone in which the setting shown is effective.	
EL-N1	Effective in plain paper mode and, in addition, when copying on a one-sided copy or on the 1st side of a two-sided copy.	Settings: –5 to +1 Unit= 0.5 kV Standard: 0
EL-N2	Effective in plain paper mode and, in addition, when copying on the 2nd side of a two-sided copy.	
EL-OHP	Effective in OHP mode.	
EL-#	Effective during image position correction control.	
EL-T1	Effective in thick paper mode and, in addition, copying on a one-sided copy or on the 1st side of a two-sided copy.	
EL-T2	Effective in thick paper mode and, in addition, copying on the 2nd side of a two-sided copy.	
EL-UT1	Effective in extra thick paper mode and, in addition, when copying on the 1st side of a two-sided copy.	
EL-UT2	Effective in extra thick paper mode and, in addition, when copying on the 2nd side of a two-sided copy.	
EL-S1-1	Effective in special paper 1 mode and, in addition, when copying on a one-sided copy or on the 1st side of a two-sided copy.	
EL-S1-2	Effective in special paper 1 mode and, in addition, when copying on the 2nd side of a two-sided copy.	
EL-S2-1	Effective in special paper 2 mode and, in addition, when copying on a one-sided copy.	
EL-S2-2	Effective in special paper 2 mode and, in addition, when copying on the 2nd side of a two-sided copy.	
EL-S3-1	Effective in thin paper and, in addition, when copying on a one-sided copy or on the 1st side of a two-sided copy.	
EL-S3-2	Effective in thin paper and, in addition, when copying on the 2nd side of a two-sided copy.	

The setting of this item will return to the default value when the PCB is replaced or the RAM is cleared, requiring input once again. Be sure to record any new setting you have made on the service label.

REF.

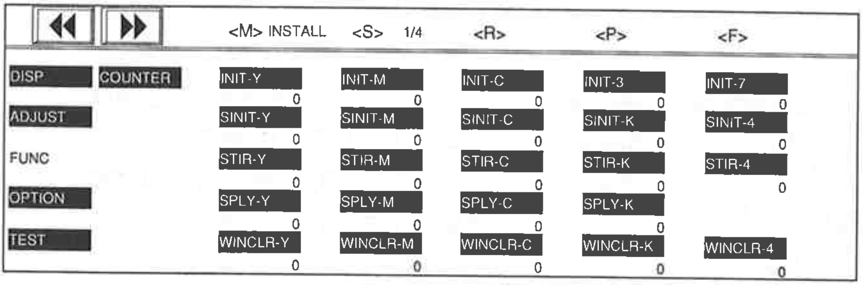
This mode will prove effective when correcting transfer faults or soiling on the back of copies under each item in question.

D. FUNCTION (function/inspection)

		<M>	<S>	<R>	<P>	<F>
DISP	COUNTER	INSTALL	R-CON	DC-CON	CCD	PRJ-ADJ
ADJUST		LASER	P-UP-TMG	ATTRACT	EPC	
FUNC		BLADE	FUSER	CST-AD	F-MISCs	F-MISCp
OPTION			TCLN	P-THICK	IMG-REG	
TEST						

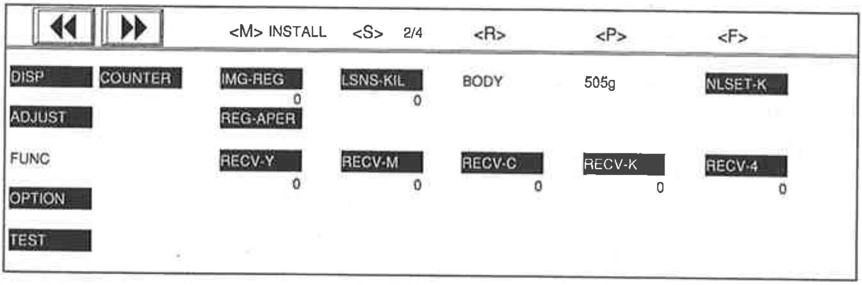
1	INSTALL	INSTALL for installation
2	R-CON	Reader controller PCB-related adjustment
3	DC-CON	DC controller PCB-related adjustment
4	CCD	CCD-related adjustment
5	PRJ-ADJ	Projector-related adjustment
6	LASER	Laser adjustment
7	P-UP-TMG	Pick-up timing adjustment
8	ATTRACT	Retention point adjustment
9	EPC	Photosensitive drum potential measurement
10	BLADE	Transfer blade/transfer belt cleaning blade operation
11	FUSER	Fixing assembly-related adjustment
12	CST-AD	Cassette paper width adjustment
13	F-MISCs	Reader-related operation/inspection
14	F-MISCp	Printer-related operation/inspection
15	TCLN	Polishing roller/oil removing roller operation
16	P-THICK	Paper thickness sensor adjustment
17	IMG-REG	Image position correction control operation/inspection

1. INSTALL (at time of installation)



<M> INSTALL <S> 1/4 <R> <P> <F>

INIT-Y 0	INIT-M 0	INIT-C 0	INIT-3 0	INIT-7 0
SINIT-Y 0	SINIT-M 0	SINIT-C 0	SINIT-K 0	SINIT-4 0
STIR-Y 0	STIR-M 0	STIR-C 0	STIR-K 0	STIR-4 0
SPLY-Y 0	SPLY-M 0	SPLY-C 0	SPLY-K 0	
WINCLR-Y 0	WINCLR-M 0	WINCLR-C 0	WINCLR-K 0	WINCLR-4 0

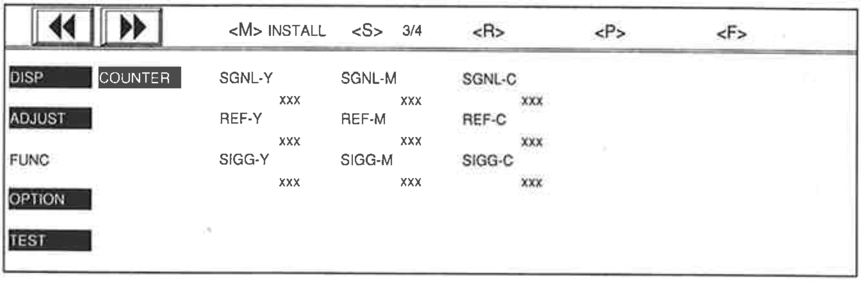


<M> INSTALL <S> 2/4 <R> <P> <F>

IMG-REG 0	LSNS-KIL 0	BODY	505g	NLSET-K
REG-APER				
RECV-Y 0	RECV-M 0	RECV-C 0	RECV-K 0	RECV-4 0

Item	Description	Remarks
INIT-Y/M/C	Use it to read in the initial value of the toner density signal (SGNL, REF) of the specified color. • The value will be indicated on screen 3/4. Record it to the service label.	
INIT-3	Reads the initial value of the toner density signal (SGNL, REF) of three colors (Y, M, C) in sequence. • The value will be indicated on screen 3/4. Record it to the service label.	
INIT-7	Reads the initial value of the toner density signal (SGNL, REF) of the ATR and SALT sensors in sequence. • The value will be indicated on screens 3/4 and 4/4. Record it to the service label.	
SINIT-Y/M/C/K	Reads the initial value of the SALT signal (SGNL, REF) of the specified color. • The value will be indicated on screen 4/4. Record it to the service label.	
SINIT-4	Reads the initial value of the SALT signal (SGNL, REF) of four colors (M, C, Y, K) in sequence. • The value will be indicated on screen 4/4. Record it to the service label.	

Item	Description	Remarks
STIR-Y/M/C/K	Stirs the developer of the specified color.	
STIR-4	Stirs the developers of the four colors at the same time.	
SPLY-Y/M/C/K	Rotates the cylinder of the developing assembly to supply developer of the specified color.	
IMG-REG	Turns on or off the image position auto correction function. 0: OFF 1: ON	
LSNS-KIL	Turns on or off the toner sensor output mode for moving up/down the hopper. 0: OFF 1: ON	Initial: 0 Used only at time of installation.
NLSET-K	Use it to suppress fogging of Bk, if noted in a low-humidity environment, as follows: 1. In the environment in question, check to make sure that the moisture content is 5 g (indicated as '500 g' on the screen) or less. 2. Replace the Bk developer. (See chapter 7. II. Standards and Adjustment, E.1 Replacing the Developer.; however, do not execute auto gradation correction as yet.) 3. Execute 'FUNC>INSTALL (2nd page)>NLSET-K' in service mode. (about 1 min) 4. Check to make sure that 'PASCAL' in 'ADJUST>PASCAL' in service mode is '1'. 5. Execute auto gradation correction in user mode.	
REG-APER	Executes auto correction of the read-in coordinates of the image position correction pattern.	
RECV-Y/M/C/K	Rotates the cylinder of the developing assembly to draw developer out of the developing assembly of the specified color. • Be sure to place the developer collecting container under the developer before opening of the developer supply mouth. ⚠ This mode is NOT to be executed at time of installation.	
RECV-4	Rotates the cylinders of the developing assemblies to draw the developers out of the developing assemblies for four colors.	
WINCLR-Y/M/C/K	Use it to read in the initial value of the window soiling correctioncoefficient of a specific color.	
WINCLR-4	Use it to read in the initial value of the window soiling correction coefficient of the four colors.	



<M> INSTALL <S> 3/4 <R> <P> <F>

DISP COUNTER

ADJUST

FUNC

OPTION

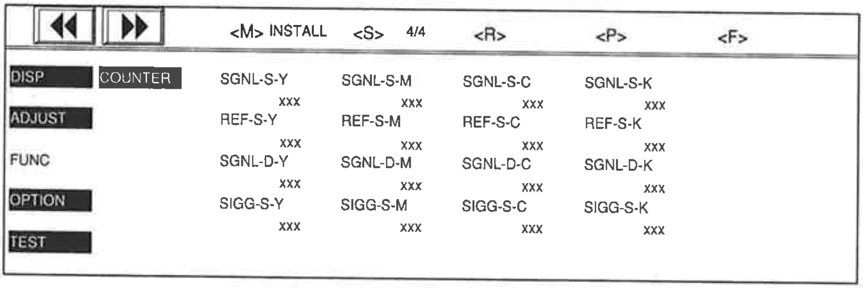
TEST

SGNL-Y xxx SGNL-M xxx SGNL-C xxx

REF-Y xxx REF-M xxx REF-C xxx

SIGG-Y xxx SIGG-M xxx SIGG-C xxx

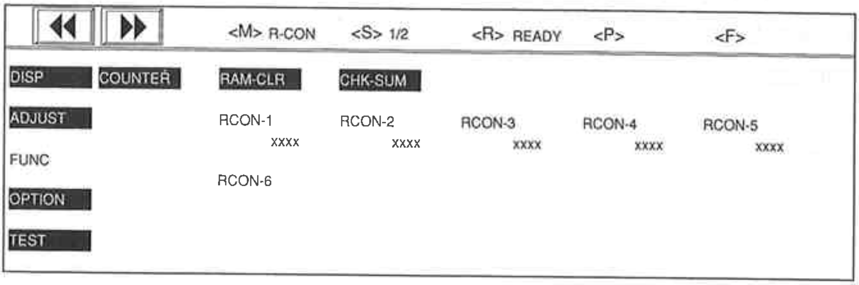
Item	Description	Remarks
SGNL-Y/M/C	Indicates the value of the toner density signal when INIT is executed as ATR control. Be sure to record the reading on the label (Figure 7-702).	For SGNL-M, SGNL-C, and SGNL-Y, normally, 818 ±41.
REF-Y/M/C	Indicates the value of the toner density reference signal when INIT is executed as ATR control. Be sure to record the reading on the label (Figure 7-702).	
SIGG-Y/M/C	Indicates the gain value (gain value used to set SGNL-M/SGNL-C/SGNL-Y to 818) for the toner density signal during ATR control. Be sure to record the reading on the label (Figure 7-702).	



```
<M> INSTALL   <S>   4/4       <R>          <P>          <F>

SGNL-S-Y      SGNL-S-M      SGNL-S-C      SGNL-S-K
       xxx           xxx           xxx           xxx
REF-S-Y       REF-S-M       REF-S-C       REF-S-K
       xxx           xxx           xxx           xxx
SGNL-D-Y      SGNL-D-M      SGNL-D-C      SGNL-D-K
       xxx           xxx           xxx           xxx
SIGG-S-Y      SIGG-S-M      SIGG-S-C      SIGG-S-K
       xxx           xxx           xxx           xxx
```

Item	Description	Remarks
SGNL-S-Y/M/C/K	Indicates the value of the SALT signal. Be sure to record the reading on the label (Figure 7-702).	
REF-S-Y/M/C/K	Indicates the value of the SALT reference signal. Be sure to record the reading (Figure 7-702).	
SGNL-D-Y/M/C/K	Indicates the value of the light reflected by the photosensitive drum. Be sure to record the reading (Figure 7-702).	
SIGG-S -Y/M/C/K	Indicates the value of the gain for the SALT signal. Be sure to record the reading (Figure 7-702).	

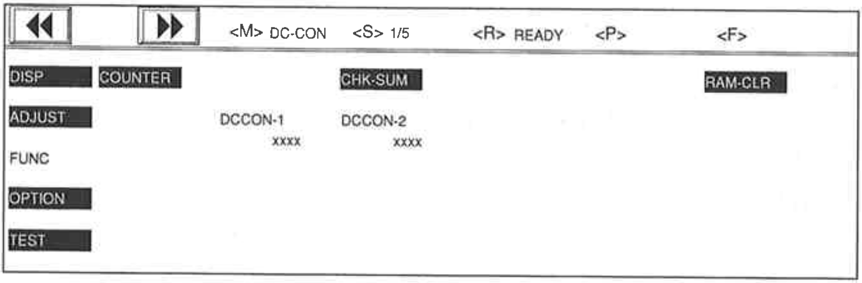
2. R-CON (reader controller PCB-related adjustment)



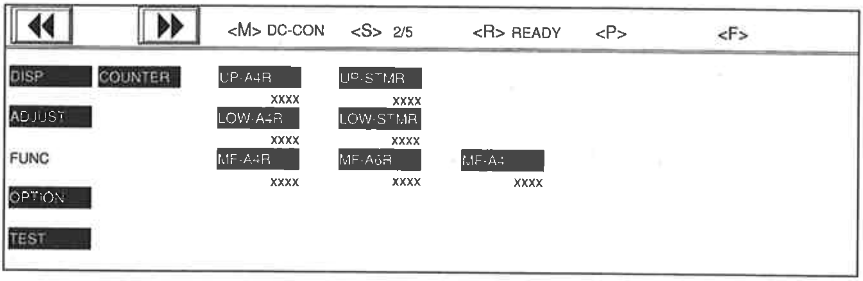
```
 ◀◀  ▶▶        <M> R-CON    <S> 1/2     <R> READY   <P>          <F>

DISP    COUNTER  RAM-CLR      CHK-SUM

ADJUST           RCON-1       RCON-2      RCON-3      RCON-4       RCON-5
                        xxxx        xxxx        xxxx         xxxx         xxxx
FUNC
                 RCON-6
OPTION

TEST
```

Item	Description	Remarks
RAM-CLR	Clears the RAM on the reader controller PCB and sets the standard value.	The power switch will automatically turn off when 'RAM-CLR' is executed. The contents of the RAM are replaced with the initial settings when the power switch is turned on thereafter.
CHK-SUM	Starts a check of the ROM on the reader controller PCB, i.e., totals the RAM data.	During operation, '<R>READY→BUSY'.
RCON-1	Indicates the check sum value of Q1301 on the reader controller PCB.	Indicates only when 'CHK-SUM' is executed.
RCON-2	Indicates the check sum value of Q1305 on the reader controller PCB.	
RCON-3	Indicates the check sum value of Q1308 on the reader controller PCB.	
RCON-4	Indicates the check sum value of Q1312 on the reader controller PCB.	
RCON-5	Indicates the check sum value of Q1315 on the reader controller PCB.	
RCON-6	Reserved.	

3. DC-CON (DC controller PCB-related adjustment)


<M> DC-CON
<S> 1/5
<R> READY
<P>
<F>
DISP
COUNTER
CHK-SUM
RAM-CLR
ADJUST
DCCON-1
xxxx
DCCON-2
xxxx
FUNC
OPTION
TEST

Item	Description	Remarks
RAM-CLR	Clears the RAM on the DC controller PCB and sets the standard value.	The contents of the RAM will not be replaced with the initial settings until the CPU on the DC controller PCB is powered, requiring you to turn off the main switch and disconnect and then connect the power plug after executing 'RAM-CLR'.
CHK-SUM	Starts a check of the ROM on the DC controller PCB, i.e., totals the data in RAM.	
DCCON-1	Indicates the check sum value of Q2341 on the DC controller PCB.	Indicates only when 'CHK-SUM' is executed.
DCCON-2	Indicates the check sum value of Q2340 on the DC controller PCB.	



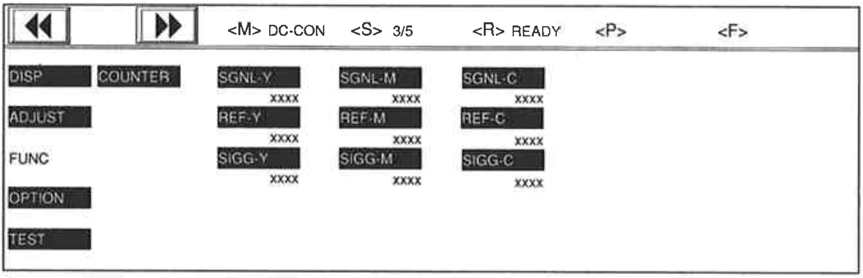
<M> DC-CON <S> 2/5 <R> READY <P> <F>

UP-A4R xxxx
UP-STMR xxxx
LOW-A4R xxxx
LOW-STMR xxxx
MF-A4R xxxx
MF-A6R xxxx
MF-A4 xxxx

Entering Backup Data

If you have executed 'RAM-CLR' for the DC controller PCB, use this screen to enter the data recorded on the label shown in Figure 7-702.

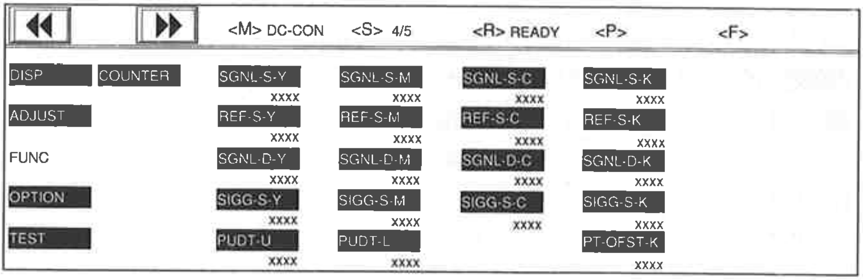
Item	Description
UP-A4R	Enters the adjustment value for paper width detection reference point 1 for cassette 1.
UP-STMR	Enters the adjustment value for paper width detection reference point 2 for cassette 1.
LOW-A4R	Enters the adjustment value for paper width detection reference point 1 for cassette 2.
LOW-STMR	Enters the adjustment value for paper width detection reference point 2 for cassette 2.
MF-A4R	Enters the adjustment value for paper width detection reference point 1 for the multifeeder.
MF-A6R	Enters the adjustment value for paper width detection reference point 2 for the multifeeder.
MF-A4	Enters the adjustment value for paper width detection reference point 3 for the multifeeder.


◀◀
▶▶
<M> DC-CON
<S> 3/5
<R> READY
<P>
<F>
DISP
COUNTER
ADJUST
FUNC
OPTION
TEST
SGNL-Y
XXXX
SGNL-M
XXXX
SGNL-C
XXXX
REF-Y
XXXX
REF-M
XXXX
REF-C
XXXX
SIGG-Y
XXXX
SIGG-M
XXXX
SIGG-C
XXXX

■ Entering Backup Data

If you have executed 'RAM-CLR' for the DC controller PCB, use this screen to enter the data recorded on the label shown in Figure 7-702.

Item	Description
SGNL-Y/M/C	Enters the value of the toner density signal when INIT is executed as ATR control.
REF-Y/M/C	Enters the value of the toner density reference signal when INIT is executed as ATR control.
SIGGY/M/C	Enters the value of the gain for the toner density signal during ATR control (gain used to sets GNL-M, SGNL-C, and SGNL-Y to 818).

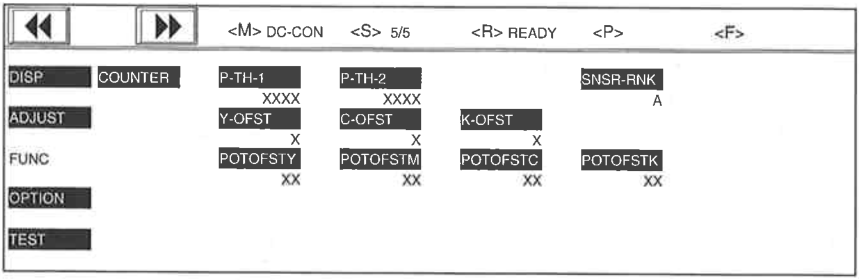


SGNL-S-Y xxxx
SGNL-S-M xxxx
SGNL-S-C xxxx
SGNL-S-K xxxx
REF-S-Y xxxx
REF-S-M xxxx
REF-S-C xxxx
REF-S-K xxxx
SGNL-D-Y xxxx
SGNL-D-M xxxx
SGNL-D-C xxxx
SGNL-D-K xxxx
SIGG-S-Y xxxx
SIGG-S-M xxxx
SIGG-S-C xxxx
SIGG-S-K xxxx
PUDT-U xxxx
PUDT-L xxxx
PT-OFST-K xxxx

Entering Backup Data

If you have executed 'RAM-CLR' for the DC controller PCB, use this screen to enter the data recorded on the label shown in Figure 7-702.

Item	Description
SGNL-S-Y/M/C/K	Use it to enter the value of the SALT signal.
REF-S-Y/M/C/K	Use it to enter the value of the SALT reference signal.
SGNL-D-Y/M/C/K	Use it to enter the value of the signal representing the intensity of light reflected by the photosensitive drum.
SIGG-S-Y/M/C/K	Use it to enter the value of the gain for the SALT signal.
PT-OFST-K	Use it to enter the adjustment value of the density pattern for SALT.
PUDT-U/L	Use it to enter the adjustment value for pick-up timing adjustment (P-UP-TMG).



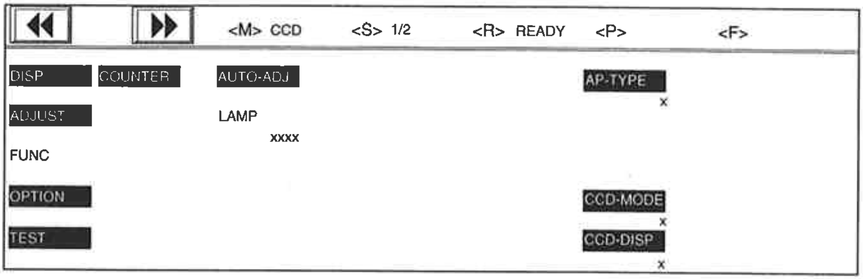
P-TH-1 XXXX
P-TH-2 XXXX
SNSR-RNK A
Y-OFST X
C-OFST X
K-OFST X
POTOFSTY XX
POTOFSTM XX
POTOFSTC XX
POTOFSTK XX

Entering Backup Data

If you have executed 'RAM-CLR' for the DC controller PCB, use this screen to enter the data recorded on the label shown in Figure 7-702.

Item	Description	Remarks
P-TH-1/2	Enters the output characteristics of the paper thickness sensor set at time of shipment from the factory.	
SNSR-RNK	Enters the characteristics (A to E) of the paper thickness sensor to be installed newly.	The values A through E change by toggle operation.
Y/C/K-OFST	Use it to enter the offset value for the image position correction pattern.	Do not enter any values other than those on the service data sheet.
POTOFSTYY/ M/C/K	Use it to enter the offset value for the potential sensor.	

4. CCD (CCD-related adjustment)



<M> CCD <S> 1/2 <R> READY <P> <F>

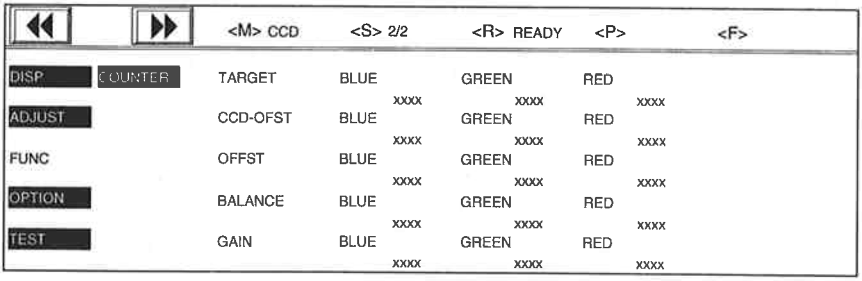
AUTO-ADJ

LAMP
xxxx

AP-TYPE
x

CCD-MODE
x

CCD-DISP
x



<M> CCD <S> 2/2 <R> READY <P> <F>

TARGET BLUE xxxx GREEN xxxx RED xxxx

CCD-OFST BLUE xxxx GREEN xxxx RED xxxx

OFFST BLUE xxxx GREEN xxxx RED xxxx

BALANCE BLUE xxxx GREEN xxxx RED xxxx

GAIN BLUE xxxx GREEN xxxx RED xxxx

Item		Description	Remarks
AUTO-ADJ		Use it to specify the start of auto adjustment. The bar code data recorded on the standard white plate is read, and offset adjustment, intensity adjustment for the scanning lamp, and gain adjustment are executed in sequence. The display changes as follows: <R>RADY > Bar code > OeAdj > Offdj > LampAdj > GainAdj > OeAdj > InitBAdj > Gz-bar.	Adjustments are made so that the value of point A is identical to the setting obtained from the bar code data recorded on the standard white plate.
LAMP		Use it to indicate the level adjustment value of the scanning lamp.	
TARGET		Use it to display the shading adjustment correction value (target value of point B).	
	BLUE	Use it to indicate the data of BLUE.	
	GREEN	Use it to indicate the data of GREEN.	
	RED	Use it to indicate the data of RED.	
GAIN-UP		Use it to indicate the setting of the gain-up mode (precious metal mode) for the analog processor PCB.	0: normal mode 255: precious metal mode

Item		Description	Remarks
OFFST		Indicates the value for offset level adjustment of the odd bits of the CCD.	
	BLUE	Indicates the data for blue of the offset level.	
	GREEN	Indicates the data for green of the offset level.	
	RED	Indicates the data for red of the offset level.	
BALANCE		Indicates the value for balance level adjustment of the even and odd bits of the CCD.	
	BLUE	Indicates the data for blue of the balance level.	
	GREEN	Indicates the data for green of the balance level.	
	RED	Indicates the data for red of the balance level.	
GAIN		Indicates the value for gain level adjustment of the CCD.	
	BLUE	Indicates the data for blue of the gain level.	
	GREEN	Indicates the data for green of the gain level.	
	RED	Indicates the data for red of the gain level.	
CCD-MODE		Use it to display the modes selected in user mode. 0: normal mode settings 1: precious metal mode settings	Standard:0
CCD-DISP		Use it to display the data notes CCD screen. 0: normal mode 1: precious metal mode	Standard:0
AP-TYPE		The type of analog processor is automatically identified when the power is turned on. 1: old type 2: new type	

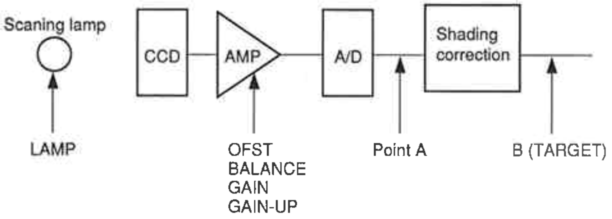
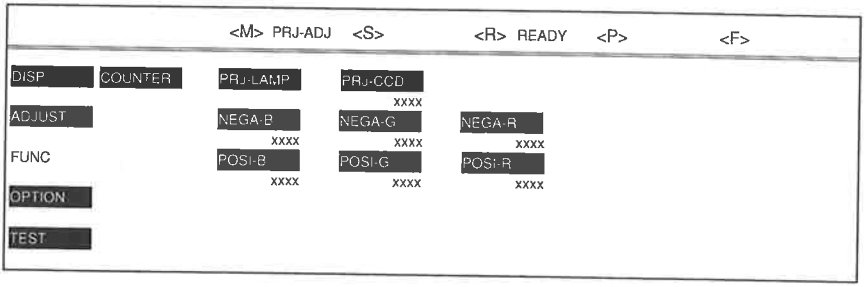


Figure 7-705

5. PRJ-ADJ (projector adjustment)

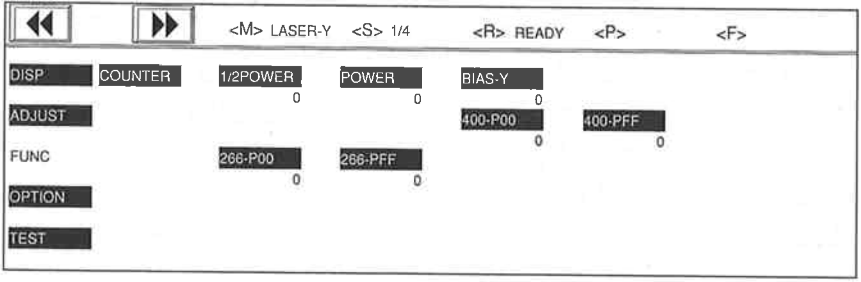

<M> PRJ-ADJ <S>
<R> READY
<P>
<F>
DISP
COUNTER
PRJ-LAMP
PRJ-CCD
xxxx
ADJUST
NEGA-B
xxxx
NEGA-G
xxxx
NEGA-R
xxxx
FUNC
POSI-B
xxxx
POSI-G
xxxx
POSI-R
xxxx
OPTION
TEST

Item	Description	Remarks
PRJ-LAMP	Keeps the lamp of the film projector ON for 1 min. (A press on the PRJ-LAMP key turns it off.)	
PRJ-CCD	Adjusts the gain for the CCD and reads the appropriate data for installation work.	
NEGA-B NEGA-G NEGA-R (Note1)	Adjusts the target value for shading when making copies of negative film using the film projector. • A higher value will make the images darker. B→Y G→M R→C	Settings: –100~+100
POSI-B POSI-G POSI-R (Note1)	Adjusts the target value for shading correction when making copies of positive film using the film projector. • A lower value will make the images darker. B→Y G→M R→C	Settings: –100~+100

Note 1:
You must enter the appropriate value whenever you have replaced the reader controller PCB or initialized a RAM; record any new values on the service label for this purpose.

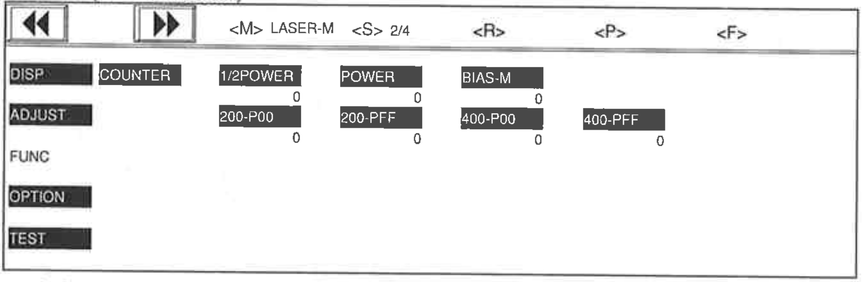
6. LASER (laser adjustment)

Screen for Y


◀◀
▶▶
<M> LASER-Y <S> 1/4 <R> READY <P> <F>
DISP
ADJUST
FUNC
OPTION
TEST
COUNTER

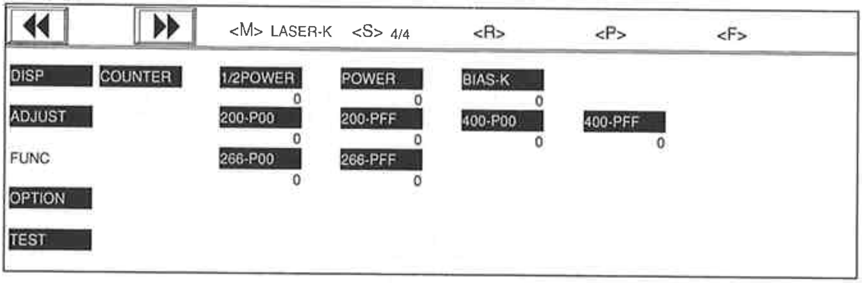
1/2POWER 0
POWER 0
BIAS-Y 0
400-P00 0
400-PFF 0
266-P00 0
266-PFF 0

Screen for M/C (screen for M is shown)


◀◀
▶▶
<M> LASER-M <S> 2/4 <R> <P> <F>
DISP
ADJUST
FUNC
OPTION
TEST
COUNTER

1/2POWER 0
POWER 0
BIAS-M 0
200-P00 0
200-PFF 0
400-P00 0
400-PFF 0

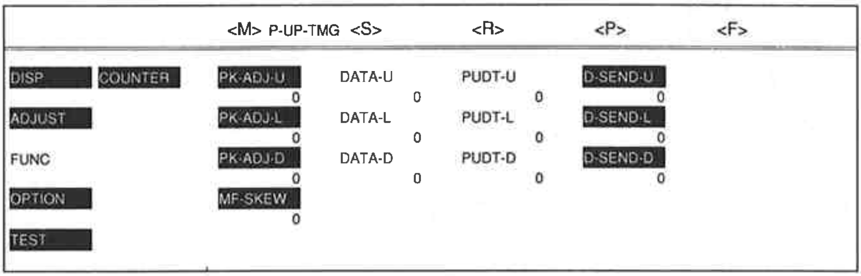
Screen for Bk


◀◀
▶▶
<M> LASER-K <S> 4/4 <R> <P> <F>
DISP
ADJUST
FUNC
OPTION
TEST
COUNTER

1/2POWER 0
POWER 0
BIAS-K 0
200-P00 0
200-PFF 0
400-P00 0
400-PFF 0
266-P00 0
266-PFF 0

Item	Description	Remarks
1/2POWER	Turns ON the laser output for laser power minimum value adjustment.	A press on the Stop key will turn off the laser output.
POWER	Turns ON the laser output for laser power maximum value adjustment.	
BIAS-Y, M, C, K	Turns ON the laser output for laser power bias value adjustment.	
400-P00-(Y, M, C, K)	Turns ON the laser output corresponding to V00 to check V00 in text mode.	
200-P00-(M, C, K) 266-P00-(Y, K)	Turns ON the laser output corresponding to V00 to check V00 in photo mode.	
400-PFF-(Y, M, C, K)	Turns ON the laser output corresponding to VFF to check VFF in text mode.	
200-PFF-(M, C, K) 266-PFF-(Y, K)	Turns ON the laser output corresponding to VFF to check VFF in photo mode.	

7. P-UP-TMG (pick-up timing adjustment)

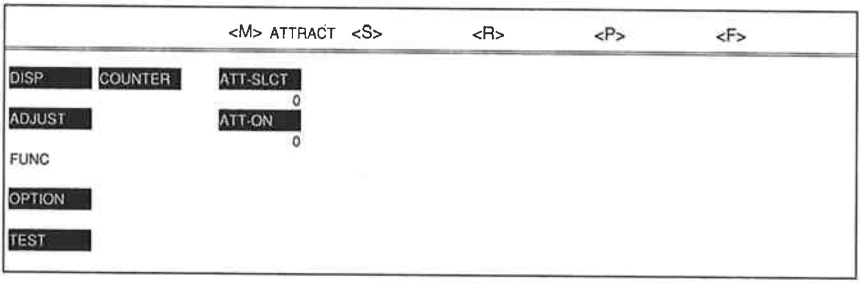


```
              <M> P-UP-TMG <S>        <R>          <P>          <F>

DISP    COUNTER   PK-ADJ-U    DATA-U      PUDT-U      D-SEND-U
                         0           0           0           0
ADJUST            PK-ADJ-L    DATA-L      PUDT-L      D-SEND-L
                         0           0           0           0
FUNC              PK-ADJ-D    DATA-D      PUDT-D      D-SEND-D
                         0           0           0           0
OPTION            MF-SKEW
                         0
TEST
```

Item	Description	Remarks
PK-ADJ-U/L	Use it to execute automatic pick-up from the upper/lower cassette, thereby obtaining the pick-up timing adjustment value. Be sure to place A4 or LTR paper in the upper and lower cassettes before executing the operation.	
DATA-U/L/D	Use it to indicate the data obtained by 'PK-ADJ-U/L/D'.	
PUDT-U/L/D	Use it to indicate the maximum value of the data obtained by 'PK-AJD-U/L/D'.	
D-SEND-U/L/D	Use it to write the obtained data into memory.	
MF-SKEW	Use it to execute skew removing operation twice when pick-up is from the multifeeder tray (effective only when the paper type is set to 'thickest'). 0: Remove skew by registration roller 1: Remove skew by registration roller and feeding roller	Use it if extra thick paper tends to move askew.
PK-ADJ-D	Use it to start automatic pick-up from the paper deck and to obtain the pick-up timing adjustment value. To execute the mode, you must place LTR paper in the paper deck.	Use the mode if a discrepancy is noted along the leading edges of LTR copies.

For how to use the modes, see chapter 7 given under "After Replacing the Pick-Up Motor/Pick-Up Unit" under J-g.

8. ATTRACT (retention position adjustment)

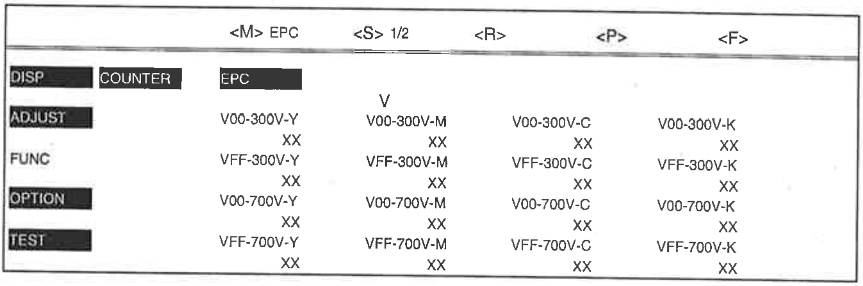


ATT-SLCT 0

ATT-ON 0

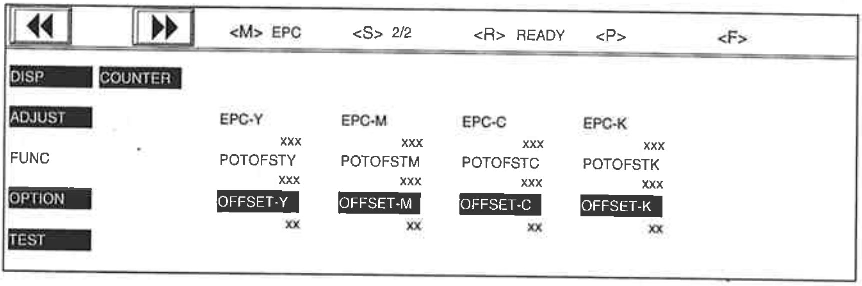
<table>
<tr><th>Item</th><th>Description</th><th>Remarks</th></tr>
<tr><td>ATT-SLCT</td><td>Selects the source of paper for checking the point of retention.
<table>
<tr><th></th><th>Source of paper</th></tr>
<tr><td>1</td><td>Upper cassette</td></tr>
<tr><td>2</td><td>Lower cassette</td></tr>
<tr><td>3</td><td>Paper deck</td></tr>
<tr><td>4</td><td>Multifeeder</td></tr>
<tr><td>5</td><td>Duplexing pick-up assembly</td></tr>
</table></td><td>Use A4/LTR paper for the mode.</td></tr>
<tr><td>ATT-ON</td><td>Starts operations according to the settings under ATT-SLCT, and stops automatically with paper retained on the transfer belt.</td><td></td></tr>
</table>

9. EPC (photosensitive drum potential measurement)



<M> EPC <S> 1/2 <R> <P> <F>

DISP	COUNTER	EPC			
			V		
ADJUST		V00-300V-Y XX	V00-300V-M XX	V00-300V-C XX	V00-300V-K XX
FUNC		VFF-300V-Y XX	VFF-300V-M XX	VFF-300V-C XX	VFF-300V-K XX
OPTION		V00-700V-Y XX	V00-700V-M XX	V00-700V-C XX	V00-700V-K XX
TEST		VFF-700V-Y XX	VFF-700V-M XX	VFF-700V-C XX	VFF-700V-K XX

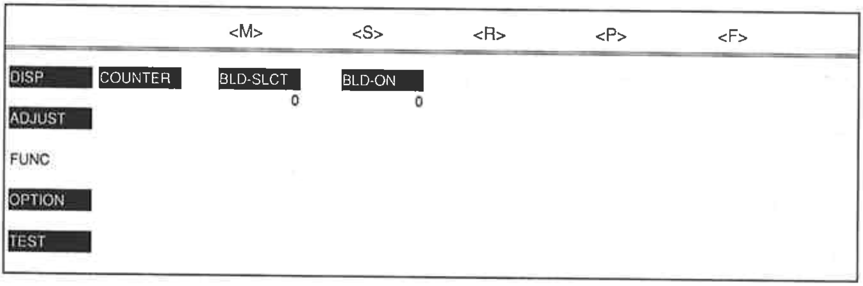


<M> EPC <S> 2/2 <R> READY <P> <F>

DISP	COUNTER				
ADJUST		EPC-Y xxx	EPC-M xxx	EPC-C xxx	EPC-K xxx
FUNC		POTOFSTY xxx	POTOFSTM xxx	POTOFSTC xxx	POTOFSTK xxx
OPTION		OFFSET-Y xx	OFFSET-M xx	OFFSET-C xx	OFFSET-K xx
TEST					

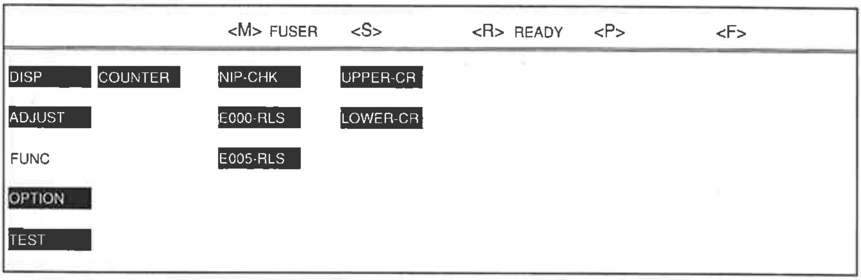
Item	Description	Remarks
EPC	Executes potential measurement on the photosensitive drum.	The potential measurement data is used for the next copying run.
POTOFSTY/M/C/K	Indicates the offset value for the potential sensor.	
OFFSET	Executes offset adjustment on the potential measurement circuit of the photosensitive drum.	The potential measurement data is used for the next copying run.
V00-300V	Indicates the photosensitive drum surface potential when the grid bias potential of the primary charging assembly is –300 V and the laser output is V00.	Approximate value: 250~350
V00-700V	Indicates the photosensitive drum surface potential when the grid bias potential of the primary charging assembly is –700 V and the laser output is V00.	Approximate value: 650~750
VFF-300V	Indicates the photosensitive drum surface potential when the grid bias potential of the primary charging assembly is –300 V and the laser output is VFF.	Approximate value: 10~150
VFF-700V	Indicates the photosensitive drum surface potential when the grid bias potential of the primary charging assembly is –700 V and the laser output is VFF.	Approximate value: 50~250

10. BLADE (transfer blade/transfer belt cleaning blade operation)



<table>
<tr><th>Item</th><th>Description</th><th>Remarks</th></tr>
<tr><td>BLD-SLCT</td><td>Use it to determine the combination of ways to operate the transfer blade and the transfer belt cleaning blade.
• Press 'BLD-SLCT', enter a number on the keypad, and press the OK key.
<table><tr><th></th><th>Transfer blade</th><th>Transfer cleaning blade</th></tr><tr><td>1</td><td>In contact</td><td>Off contact</td></tr><tr><td>2</td><td>Off contact</td><td>In contact</td></tr><tr><td>3</td><td>In contact</td><td>In contact</td></tr></table></td><td></td></tr>
<tr><td>BLD-ON</td><td>Starts operation according to the settings under BLD-SLCT. In 10 sec, the blade will take off-contact position.</td><td></td></tr>
</table>

11. FUSER (fixing assembly-related adjustment)



<M> FUSER <S> <R> READY <P> <F>

DISP COUNTER NIP-CHK UPPER-CR

ADJUST E000-RLS LOWER-CR

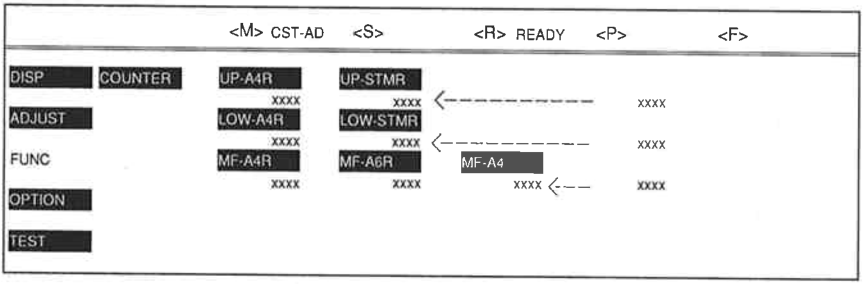
FUNC E005-RLS

OPTION

TEST

Item	Description	Remarks
NIP-CHK	Measures the fixing assembly nip. Paper is stopped once at the point of fixing and then delivered. Sine the operation uses cassette 1 as the source of paper, 'NO PAPER' will be indicated over 'P' if no paper exists in cassette 1. The notation changes to 'READY' when paper is supplied.	Press NIP-CHK to execute. The notation over 'P' changes from READY > SERVICE > to READY to end the execution.
E000-RLS	Clears E000. Be sure to turn off and then on the power switch after execution.	The notation over 'P' changes from ERROR to BUSY and then to ERROR. Turn off and on the power switch to clear.
E005-RLS	Clears E005. Be sure to turn off and then on the power switch after execution.	
UPPER-CR	Use it to adjust the fixing temperature value (upper roller). If you have replaced the fixing assembly, enter the value recorded on the label attached to the fixing assembly. Thereafter, be sure to turn off and then on the power switch.	At time of shipment:0 Settings:–3 to +3 ⚠ Do not enter a value other than the one indicated on the label.
LOWER-CR	Use it to adjust the fixing temperature value (lower roller). If you have replaced the fixing assembly, enter the value recorded on the label attached to the fixing assembly. Thereafter, be sure to turn off and then on the power switch.	

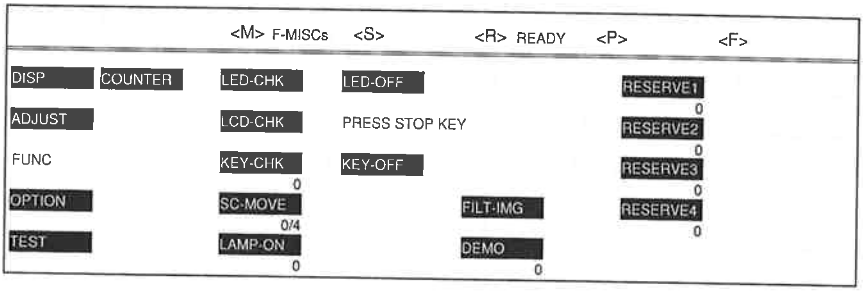
12. CST-AD (cassette paper width adjustment)

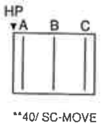

<M> CST-AD
<S>
<R> READY
<P>
<F>
DISP
COUNTER
ADJUST
FUNC
OPTION
TEST
UP-A4R
xxxx
LOW-A4R
xxxx
MF-A4R
xxxx
UP-STMR
xxxx
LOW-STMR
xxxx
MF-A6R
xxxx
MF-A4
xxxx
xxxx
xxxx
xxxx

See 5. “Registering Basic Settings” under B. “Electrical” in II. “Standards and Adjustments.”

Item	Description	Remarks
UP-A4R	Executes automatic adjustment of paper width detection reference point 1 for cassette 1.	
UP-STMR	Executes automatic adjustment of paper width detection reference point 2 for cassette 1.	
LOW-A4R	Executes automatic adjustment of paper width detection reference point 1 for cassette 2.	
LOW-STMR	Executes automatic adjustment of paper width detection reference point 2 for cassette 2.	
MF-A4R	Executes automatic adjustment of paper width detection reference point 1 for the multifeeder.	
MF-A6R	Executes automatic adjustment of paper width detection reference point 2 for the multifeeder.	
MF-A4	Executes automatic adjustment of paper width detection reference point 3 for the multifeeder.	

13. F-MISCs (reader-related operation/inspection)

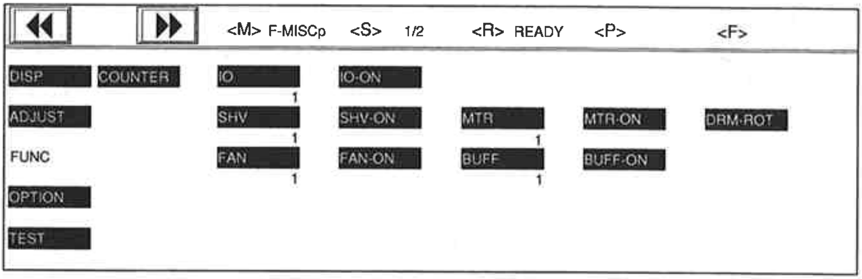

<M> F-MISCs <S> <R> READY <P> <F>
DISP
COUNTER
ADJUST
FUNC
OPTION
TEST
LED-CHK
LCD-CHK
KEY-CHK
0
SC-MOVE
0/4
LAMP-ON
0
LED-OFF
PRESS STOP KEY
KEY-OFF
FILT-IMG
DEMO
0
RESERVE1
0
RESERVE2
0
RESERVE3
0
RESERVE4
0

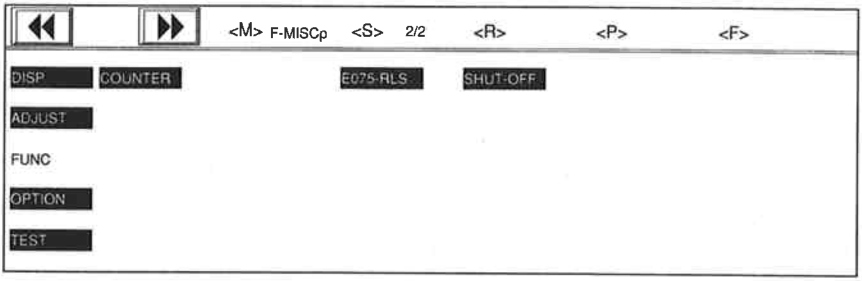
Item	Description	Remarks
LED-CHK	Starts an activation check on the LED.	
LED-OFF	Ends an activation check on the LED.	
LCD-CHK	Starts an activation check on the LCD. (The notation becomes highlighted.)	A press on the Stop key ends the check.
KEY-CHK	Starts an input check on the key. (See the detail for KEY-CHK.)	Indicates the number/ name of the input key in question.
KEY-OFF	Ends the input check on the key.	
SC-MOVE	Starts a check on the scanner. Each press on SC-MOVED changes the notation and the operation as follows: Notation — Operation 0/4 — HP→A 1/4 — A→B 2/4 — B→C 3/4 — C→HP	 HP A B C **40/ SC-MOVE
LAMP-ON	Starts a check on the scanning lamp. Each press on LAMP-ON changes the notation and the operation as follows: Notation — Operation 0→1 — ON when intensity data 80 (light) 1→0 — ON when Intensity data 00 (dark)	Each press on the key switches between '00' and '80' for the intensity data. • '00' represents OFF.
DEMO	Reserved.	
RESERVE1/2/3/4	Reserved.	

■ Details of KEY-CHK

Key	Key name indicated on the panel
0 to 9	0~9
Reset	RESET
Stop	STOP
Two-Sided	A
One-Touch Adjust	B
Color Adjust	C
Extended Zoom	D
Frame Erase	E
Color Create	F
Page Separate	G
Shift	H
Image Create	I
Freehand	J
Area Select	K
Synthesize	L
User Mode	M
Cover	N
Transparency Insert	O
Start	START
Pre-Heat	STAND BY
Interrupt	INTERRUPT
Clear	CLEAR
ID	ID
Call	CALL

14. F-MISCp (printer-related operation/inspection)


<M> F-MISCp <S> 1/2 <R> READY <P> <F>
DISP
COUNTER
IO
1
IO-ON
ADJUST
SHV
1
SHV-ON
MTR
1
MTR-ON
DRM-ROT
FUNC
FAN
1
FAN-ON
BUFF
1
BUFF-ON
OPTION
TEST


<M> F-MISCp <S> 2/2 <R> <P> <F>
DISP
COUNTER
E075-RLS
SHUT-OFF
ADJUST
FUNC
OPTION
TEST

Item	Description	Remarks
IO	Use it to select the type of IO (input/output) check.	See the details section.
IO-ON	Use it to start an IO (input/output) check.	
SHV	Use it to select the type of check on the high-voltage output. Enter a number on the keypad, and press the OK key.	Settings: 0 to 6 See the details section.
SHV-ON	Use it to start a check on the high-voltage output. Press the Stop key to stop operation.	
MTR	Use it to select the type of check on the motor. Enter a number on the keypad, and press the OK key.	Settings: 00 to 18 See the details section.
MRT-ON	Use it to start a check on the motor. Press the Stop key to stop the operation.	
FAN	Use it to select the type of check on the fan. Enter a number on the keypad, and press the OK key.	Settings: 00 to 19 See the details section.
FAN-ON	Use it to start a check on the fan. Press the Stop key to stop the operation.	
DRM-ROT	Use it to cause the drum to rotate dly for 10 min. Press the Stop key to stop.	Be sure to release the transfer belt before execution.

Item	Description	Remarks
BUFF	Use it to select the stop position (length of advance) for the locking cam inside the buffer path. 1: 0 mm 2: 0.7 mm 3: 1.2 mm Enter a number on the keypad, and press the OK key.	
BUFF-ON	Use it to drive the buffer path motor and the solenoid, thereby moving the cam to the position selected under 'BUFF'. Be sure to set 'BUFF=1' and execute 'BUFF-ON' after the check.	
E075/RLS	Use it to clear 'E075'. After execution, check to make sure that the transfer belt is at the correct position; then, turn off and then on the power switch.	
SHUT-OFF	Use it to check the operation of the auto power-off mechanism.	

Details of IO

No.	Parts name	No.	Parts name
1	Transfer cleaning blade solenoid (SL6)	27	Multifeeder feeding clutch (CL7)
2	Transfer belt lifter clutch (CL17)	28	Paper deck pick-up clutch (CL8001)
3	Polishing roller solenoid (SL18)	29	Paper deck feeding clutch (CL8002)
4	Y transfer blade (SL7Y)	30	Duplexing assembly pick-up roller clutch (CL10)
5	M transfer blade (SL7M)	31	Registration releasing solenoid (SL16)
6	C transfer blade (SL7C)	32	Registration roller clutch (CL8)
7	K transfer blade (SL7Bk)	33	Pick-up vertical path roller 1 clutch (CL11)
8	Y toner supply clutch (CL1)	34	Pick-up vertical path roller 2 clutch (CL13)
9	M toner supply clutch (CL2)	35	Pick-up vertical path roller 3 clutch (CL15)
10	C toner supply clutch (CL3)	36	Stopper plate solenoid (SL12)
11	K upper toner supply clutch (CL4)	37	Reversal drive clutch (CL16)
12	K lower toner supply clutch (CL5)	38	Delivery deflecting plate solenoid (SL14)
13	Fixing web take up solenoid (SL3)	39	Duplexing unit paper deflecting plate solenoid (L; SL11L)
14	Fixing web releasing solenoid (SL4)	40	Duplexing unit paper deflecting plate solenoid (M; SL11M)
15	Fixing oil pump drive solenoid (SL2)	41	Duplexing unit paper deflecting plate solenoid (S; SL11S)
16	Separation claw releasing solenoid (SL15)	42	Buffer cam switching solenoid (SL1)
17	SALT sensor shutter solenoid (SL17Y, M, C, Bk)	43	Buffer cam switching solenoid (SL2)
18	Cassette 1 pick-up roller releasing solenoid (SL9)	44	Buffer cam shaft speed switching clutch (CL1)
19	Cassette 2 pick-up roller releasing solenoid (SL10)	45	Pre-exposure lamp (LA1~4)
20	Multifeeder 2 pick-up roller releasing solenoid (SL5)	46	Fixing motor (M9)
21	Paper deck 2 pick-up roller releasing solenoid (SL8001)	47	ATR LED
22	Duplexing unit pick-up roller releasing solenoid (SL8)	48	SALT-Y LED
23	Feeding roller solenoid (SL13)	49	SALT-M LED
24	Cassette 1 pick-up clutch (CL12)	50	SALT-C LED
25	Cassette 2 pick-up clutch (CL14)	51	SALT-K LED
26	Multifeeder pick-up clutch (CL6)		

- Details of SHV

No.	High-voltage output	Control
1	Primary Y charging assembly, grid Y output, auxiliary high-voltage Y (–350 µA), developing bias YDC (–370 V) output	Transfer lifter DOWN, photosensitive drum motor ON, pre-exposure ON, primary Y output, grid Y output (500 V), auxiliary high-voltage output Y (–350 µA), developing bias YDC (-370 V) output ON (Waits for a stop command, or 60 sec.) Primary Y output, grid Y output (500 V), auxiliary high-voltage output Y (–350 µA), developing bias YDC (–370 V) output OFF, pre-exposure OFF, photosensitive drum motor OFF
2	Primary M charging assembly, grid M output, auxiliary high-voltage Y (–350 µA), developing bias MDC (–370 V) output	Transfer lifter DOWN, photosensitive drum motor ON, pre-exposure ON, primary M output, grid M output (500 V), auxiliary high-voltage output M (–350 µA), developing bias MDC (–370 V) output ON (Waits for a stop command, or 60 sec.) Primary M output, grid M output (500 V), auxiliary high-voltage output M (–350 µA), developing bias MDC (–370 V) output OFF, pre-exposure OFF, photosensitive drum motor OFF
3	Primary C charging assembly, grid C output, auxiliary high-voltage Y (–350 µA), developing bias CDC (–370 V) output	Transfer lifter DOWN, photosensitive drum motor ON, pre-exposure ON, primary C output, grid C output (500 V), auxiliary high-voltage output C (–350 µA), developing bias CDC (–370 V) output ON (Waits for a stop command, or 60 sec.) Primary C output, grid C output (500 V), auxiliary high-voltage output C (–350 µA), developing bias CDC (–370 V) output OFF, pre-exposure OFF, photosensitive drum motor OFF
4	Primary K charging assembly, grid K output, auxiliary high-voltage Y (–350 µA), developing bias KDC (–370 V) output	Transfer lifter DOWN, photosensitive drum motor ON, pre-exposure ON, primary K output, grid K output (500 V), auxiliary high-voltage output K (–350 µA), developing bias KDC (–370 V) output ON (Waits for a stop command, or 60 sec.) Primary K output, grid K output (500 V), auxiliary high-voltage output K (–350 µA), developing bias KDC (–370 V) output OFF, pre-exposure OFF, photosensitive drum motor OFF

No.	High-voltage output	Control
5	Primary Y/M/C/K primary charging assembly, Y/M/C/K grid output, Y/M/C/K transfer high-voltage, developing bias Y/M/C/K-DC (–370 V) output, internal static eliminator assembly, separation charging assembly output	Transfer lifter UP, photosensitive drum motor ON, pre-exposure ON, belt motor ON, transfer blade ON Y/M/C/K primary output, grid output (500 V), developing bias DC (-370 V) output, internal static eliminator assembly output, separation charging output, transfer charging output ON (Waits for a stop command while the transfer belt makes 10 rotations.) Transfer charging output, internal static eliminator assembly output, separation charging output OFF, transfer blade OFF, post rotation sequence
6	Developing bias Y-AC/DC output, anti-stray toner high-voltage output	Developing bias Y-AC/DC output, anti-stray toner high-voltage output ON (Waits for a stop command, or 60 sec.) Developing bias Y-AC/DC output, anti-stray toner high-voltage output OFF
7	Developing bias M-AC/DC output, anti-stray toner high-voltage output	Developing bias M-AC/DC output, anti-stray toner high-voltage output ON (Waits for a stop command, or 60 sec.) Developing bias M-AC/DC output, anti-stray toner high-voltage output OFF
8	Developing bias C-AC/DC output, anti-stray toner high-voltage output	Developing bias C-AC/DC output, anti-stray toner high-voltage output ON (Waits for a stop command, or 60 sec.) Developing bias C-AC/DC output, anti-stray toner high-voltage output OFF
9	Developing bias K-AC/DC output, anti-stray toner high-voltage output	Developing bias K-AC/DC output, anti-stray toner high-voltage output ON (Waits for a stop command, or 60 sec.) Developing bias K-AC/DC output, anti-stray toner high-voltage output OFF

- Details of MTR

No.	Motor	Control
1	M10 (pick-up motor) (Note 1)	Operates for 10 sec, stops for 3 sec, and then operates for 10 sec and stops.
2	M21 (photosensitive drum motor) (Note 1)	Operates for 10 sec, stops for 3 sec, and then operates for 10 sec and stops.
3	M8 (laser scanner motor) (Note 1)	Operates for 10 sec, stops for 3 sec, and then operates for 10 sec and stops.
4	M20 (waste toner feeding motor) (Note 1)	Operates for 10 sec, stops for 3 sec, and then operates for 10 sec and stops.
5	M18Y, M18M, M18C, M18Bk (Y/M/C/K developing motor) (Note 1)	Operates for 10 sec, stops for 3 sec, and then operates for 10 sec and stops.
6	M9 (fixing motor) (Note 1)	Rotates for 10 sec at standard speed (138 mm/sec) for plain paper (64 to 104 g), for 10 sec at standard speed (90 mm/sec) for thick paper (157 g), for 10 sec at standard speed (68 mm/sec) for ultra thick paper (209 g), for 10 sec at gloss speed (45 mm/sec) for extra thick paper (209 g), and stops for 3 sec.
7	M14 (transfer belt motor) (Note 1)	Operates for an equivalent of 2 rotations of the belt and stops for 3 sec; then, operates for an equivalent of 2 rotations, and stops.
8	M11 (pre-fixing feeding motor) (Note 1)	Rotates for 10 sec at standard speed (138 mm/sec) for plain paper (64 to 104 g), for 10 sec at standard speed (90 mm/sec) for thick paper (157 g), for 10 sec at standard speed (68 mm/sec) for ultra thick paper (209 g), for 10 sec at gloss speed (45 mm/sec) for extra thick paper (209 g), and stops for 3 sec.
9	Buffer path unit motor (Note 1)	Rotates for 10 sec at standard speed (138 mm/sec) for plain paper (64 to 104 g), for 10 sec at standard speed (90 mm/sec) for thick paper (157 g), for 10 sec at standard speed (68 mm/sec) for ultra thick paper (209 g), for 10 sec at gloss speed (45 mm/sec) for extra thick paper (209 g), and stops for 3 sec.
10	M19 (duplexing unit feeding motor) (Note 1)	Operates for 10 sec, stops for 3 sec, and then operates for 10 sec and stops.
11	M15 (polishing/oil removing motor) (Note 1)	Rotates CCW/CW for 10 sec, stops for 3 sec, rotates CCW for 10, and then stops.
12	M24Y, M24M, M24C, M24Bk (primary wire cleaning motor)	Cleans by a single back-and-forth trip.
13	Fixing web motor	Operates for 5 sec and then stops.

Note 1:
Its operation stops in response to a press on the Stop key.

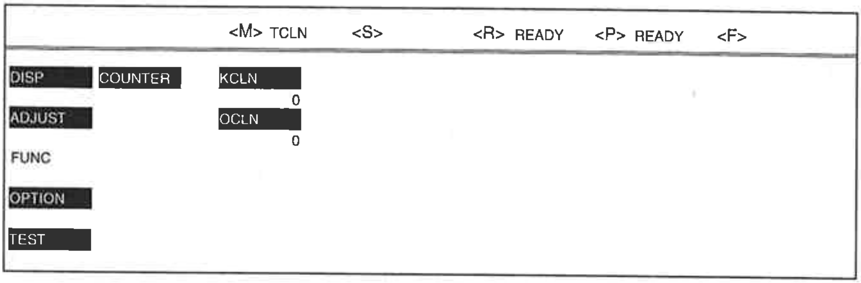
No.	Motor	Control
14	M12 (transfer cleaner web motor)	Operates for 1 sec and then stops.
15	M2 (image position slope correction motor for Y)	Rotates CW for a single full turn, rotates CCW for a single turn, and then stops.
16	M3 (image position ratio correction motor for Y)	Rotates CW for a single full turn, rotates CCW for a single turn, and then stops.
17	M5 (image position slope correction motor for C)	Rotates CW for a single full turn, rotates CCW for a single turn, and then stops.
18	M6 (image ratio correction motor for C)	Rotates CW for a single full turn, rotates CCW for a single turn, and then stops.
19	M7 (image position slope correction motor for Bk)	Rotates CW for a single full turn, rotates CCW for a single turn, and then stops.
20	M8 (image position ratio correction motor for Bk)	Rotates CW for a single full turn, rotates CCW for a single turn, and then stops.
21	M13 (transfer belt swing motor)	Rotates CW for a single full turn, rotates CCW for a single turn, and then stops.
22	M23 (duplexing unit stacking guide motor)	Executes home position detection, stops for 3 sec, moves to A4 position, stops for 3 sec, moves to B4 position, stops for 3 sec, moves to A4R position, stops for 3 sec, moves to B5R position, stops for 3 sec, and then moves to home position.
23	M28 (duplexing unit reversal motor)	Rotates for draw-in operation for 3 sec, rotates for feed-out operation for 3 sec, stops for 1 sec, rotates for draw-in for 3 sec, rotates for feed-out for 3 sec, and then stops.
24	M16 (upper cassette lifter motor)	Rotates for lifter-up operation for 3 sec, and then stops. (Return the lifter by hand.)
25	M17 (lower cassette lifter motor)	Rotates for lifter-up operation for 3 sec, and then stops. (Return the lifter by hand.)
26	M1 (multifeeder lifter motor)	Rotates for lifter-up operation for 3 sec, stops for 3 sec, rotates for lifter-down operation for 3 sec, and then stops.
27	M8001 (paper deck motor)	Rotates for lifter-down operation for 10 sec, rotates for lifter-up operation for 10 sec, and then stops.
28	Registration shutter motor	Executes a single registration shutter open/close operation.
29	Y/C/Bk image correction mirror Ratio correction motor (M3, M6, M8)	Operates the image correction mirror, and generates a test pattern (PG=06, grid); then, returns the mirror to original position. (Each motor may be assumed to be operating normally if a discrepancy exists between the M grid and the grid of each color.) Pick-up will be from the cassette 1; be sure to put A4/LTR paper in the cassette in advance.
30	Y/C/Bk image correction mirror Slant correction motor (M2, M5, M7)	

- Details of FAN

Type	Fan	Control
1	Laser cooling fan (FM4, front; FM5, rear)	On for 5 sec, off for 5 sec; then, remains on continuously.
2	Primary suction fan (FM8, left; FM9, right)	ON for 5 sec, off for 5 sec; then, on for 5 sec and stops.
3	Primary exhaust fan (FM6)	On for 5 sec, off for 5 sec; then, on for 5 sec and stops.
4	Pre-fixing feeding fan (FM7) high-speed rotation	On for 5 sec, off for 5 sec; then, on for 5 sec and stops.
5	Pre-fixing feeding fan (FM7) low-speed rotation	
6	Delivery assembly cooling fans (FM1), 2 (FM2), 3 (FM3) high-speed rotation	On for 5 sec, off for 5 sec;then, operates continuously.
7	Delivery assembly cooling fan 1 (FM1), 2 (FM2), 3 (FM3) low-speed rotation	
8	Delivery lower cooling fan 1 (FM19), 2 (FM20)	

Press the Stop key to stop the operation, thereby returning to normal state.

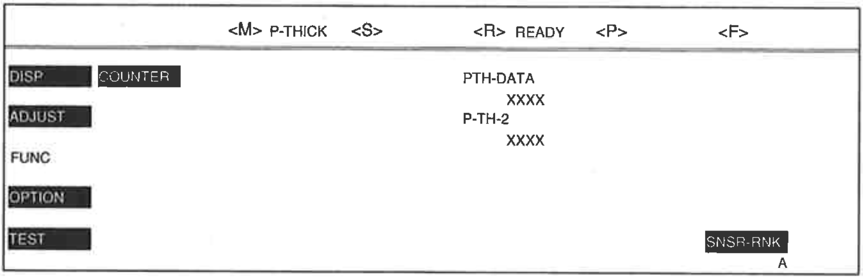
15. TCLN (polishing roller/oil removing roller operation)



```
                         <M> TCLN    <S>        <R> READY   <P> READY    <F>
DISP      COUNTER        KCLN
                                0
ADJUST                   OCLN
                                0
FUNC

OPTION

TEST
```

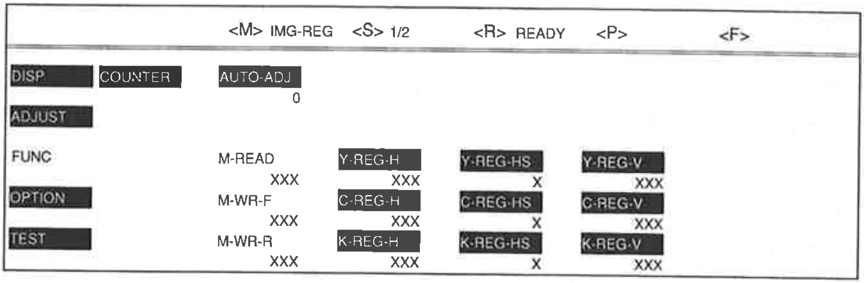
Item	Description	Remarks
KCLN	Use it to bring the polishing roller in contact while moving the transfer belt. The operation will stop after last rotating sequence. (for about 4 min). During operation, the notation is 'P' SERVICE.	Stops automatically after operating for a specific period of time.
OCLN	Butts the oil removing roller against the transfer belt, and rotates both the transfer belt and the oil removing roller (for about 4 min). During operation, the notation is 'P' SERVICE.	

16. P-THICK (paper thickness sensor adjustment)

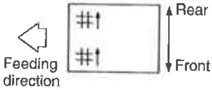
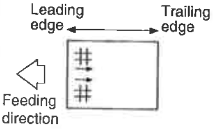

<M> P-THICK <S> <R> READY <P> <F>
DISP
COUNTER
ADJUST
FUNC
OPTION
TEST
PTH-DATA
XXXX
P-TH-2
XXXX
SNSR-RNK
A

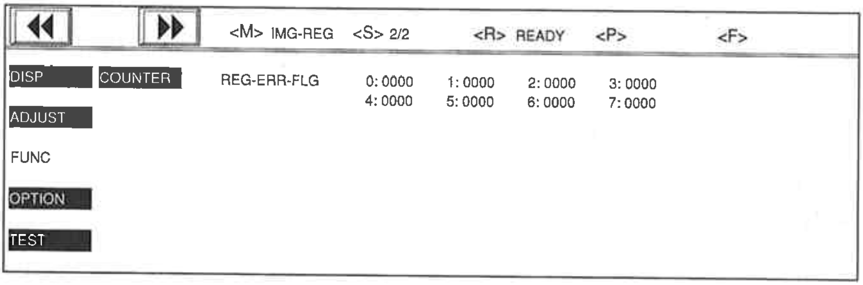
Item	Description	Remarks
P-TH-1/2	Indicates the output characteristics of the paper thickness sensor set at time of shipment from the factory.	
SNSR-RNK	Enters the characteristics (A through E) of the paper thickness sensor to be installed newly.	Values A through E change by toggle operation.

17. IMG-REG (image position correction control)



```
                          <M> IMG-REG   <S> 1/2        <R> READY    <P>              <F>

DISP      COUNTER         AUTO-ADJ
                                 0
ADJUST

FUNC                      M-READ        Y-REG-H        Y-REG-HS      Y-REG-V
                              XXX            XXX              X           XXX
OPTION                    M-WR-F        C-REG-H        C-REG-HS      C-REG-V
                              XXX            XXX              X           XXX
TEST                      M-WR-R        K-REG-H        K-REG-HS      K-REG-V
                              XXX            XXX              X           XXX
```

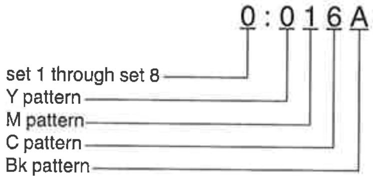
Item	Description	Remarks
AUTO-ADJ	Use it to execute the series of operations for image position correction control. <P>READY > SERVICE > READY	1 min 30 sec (approx.)
M-READ	Use it to indicate the start position of reading the pattern for M.	
M-W-F M-W-R	Use it to indicate the start position of writing the pattern for M. F: Front. R: Rear.	
Y/C/K-REG-H	Use it to correct the write start position of the pattern for Y/C/K. (rough adjustment in main scanning direction) ⚠ Do not use this item unless 'E194' is indicated (error that disables image position correction).	A higher setting shifts the pattern to the rear.  Unit = 1 pixel (63.5µm) Settings: 0 to 255 Standard: 128
Y/C/K-REG-HS	Use it to correct the write start position of the pattern for Y/C/K. (fine adjustment in main scanning direction)	Unit = 1/4 pixel Settings: 0 to 3 Standard: 0
Y/C/K-REG-V	Use it to correct the write start position of the pattern for Y/C/K. (sub scanning direction) ⚠ Do not use this item unless 'E194' is indicated (error that disables image position correction).	A higher setting will shift the pattern to the trailing edge.  Leading edge Trailing edge Feeding direction #→ #→ Unit = 1 pixel (63.5µm) Settings: 0 to 255 Standard: 128


◀◀
▶▶
DISP
COUNTER
ADJUST
FUNC
OPTION
TEST

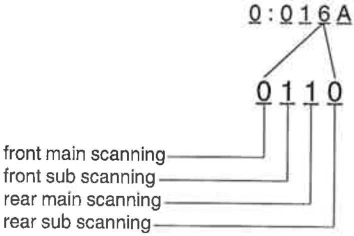
<M> IMG-REG <S> 2/2 <R> READY <P> <F>

REG-ERR-FLG 0: 0000 1: 0000 2: 0000 3: 0000
4: 0000 5: 0000 6: 0000 7: 0000

<table>
<tr><th>Item</th><th>Description</th></tr>
<tr><td>REG-ERR-FLG</td><td>
Indicates how the image position correction pattern is read.
0:0000 through 7:0000 corresponds to 8 sets of patterns.
('0000' indicates the absence of an error; if an error is found in all 8 sets, 'E194' will be indicated. If any of the sets is '0000', its data will be used for correction.)

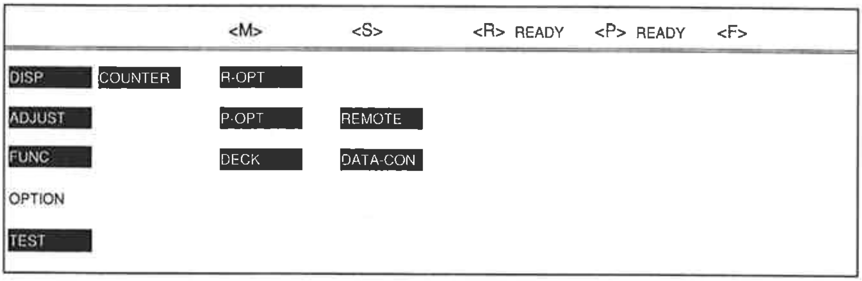

0 : 0 1 6 A
set 1 through set 8
Y pattern
M pattern
C pattern
Bk pattern

4-bit data is assigned to each color data, and a '1' is assigned where an error exists.


0 : 0 1 6 A
0 1 1 0
front main scanning
front sub scanning
rear main scanning
rear sub scanning

In the case of the above, an error exists on the pattern for C of set 1 at front in sub scanning direction and at rear in main scanning direction.
</td></tr>
</table>

E. OPTION (options mode)



<M> <S> <R> READY <P> READY <F>

DISP COUNTER R-OPT

ADJUST P-OPT REMOTE

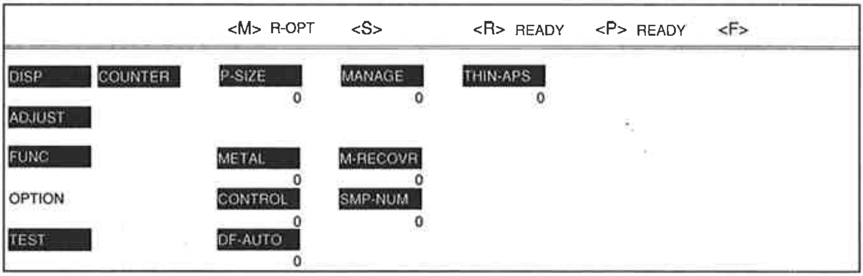
FUNC DECK DATA-CON

OPTION

TEST

1	R-OPT	Selects reader-related machine settings.
2	P-OPT	Adjusts the cleaning mode transfer drum stop position.
3	REMOTE	Sets conditions for connection with an external controller.
4	DECK	Sets conditions for connection with a paper deck.
5	DATA-CON	Use it to disconnect the copy Data Controller-A1.

1. R-OPT (reader-related machine settings)



<M> R-OPT <S> <R> READY <P> READY <F>

DISP COUNTER P-SIZE 0 MANAGE 0 THIN-APS 0

ADJUST

FUNC METAL 0 M-RECOVR 0

OPTION CONTROL 0 SMP-NUM 0

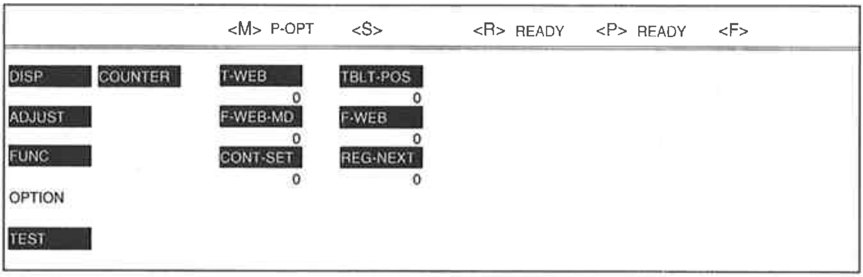
TEST DF-AUTO 0

Item	Description	Remarks
P-SIZE (Note 1)	Identifies the size of paper and transparency of the copier.	0: AB-configuration 1: Inch-configuration 2: A-configuration 3: All
METAL (Note 1)	Determines whether to use or not metal mode in user mode.	Standard: 0 0: Not available 1: Available
CONTROL (Note 1)	Reserved	
DF-AUTO (Note 1)	Enables or disables auto start for manual pick-up in the RF. 0: Disable auto start. 1: Enable auto start.	Standard: 1
MANAGE	Use it to bring the hues closer to those of professional printing. 1: Standard 0: Professional printing If 'MANAGE' is set to '1', the Pro Print key will be indicated on the user mode screen.	Standard: 1 For fine-adjustment, see the descriptions for 'AJDUST>COL-ADJ>P-TBL-M/C/Y/K'.
SMP-NUM	Use it to change the range of sampling of the data representing the color selected on an original for color conversion. 0:sample selected color in area of 2x2 1: sample selected color in area of 4x4 REF. In the case of an original composed of dots, correct color identification. May not be identified; if such is the case, set it to '1' to increase the number of samplings.	Standard: 0

Item	Description	Remarks
THIN-APS	Use it to enable auto paper selection for thin paper. 0:disable auto paper selection 1:enable auto paper selection REF. Thin paper will not be selected if of the following modes is selected. • sort, group, staple • double-sided	Standard:0
M-RECOVER	Use it to execute recovery without moving the scanner for recovery copying after the presence of a jam or the absence of toner/oil/paper has been identified. 0: normal operation 1: no re-scanning during recovery copying Conditions: RDF not used, page separation not used, auto vertical/horizontal rotation not used, double-sided copying not used, enlargement page separation not used, reduced image page composition not used.	Standard:0

Note 1:
You must enter the appropriate value whenever you have replaced reader controller PCB or initialized a RAM; record any new values on the service label for this purpose.

2. P-OPT (cleaning mode)



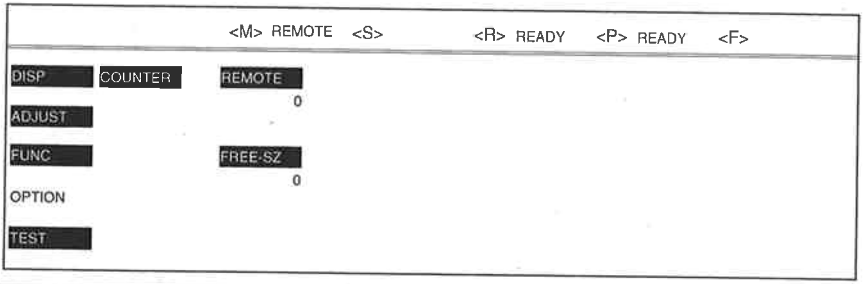
<M> P-OPT <S> <R> READY <P> READY <F>

T-WEB 0
TBLT-POS 0
F-WEB-MD 0
F-WEB 0
CONT-SET 0
REG-NEXT 0

Item	Description	Remarks
T-WEB (Note 1)	Changes the frequency at which the transfer belt cleaning web turns on.	Settings: 1~5 Standard: 3
TBLT-POS (Note 1)	Changes the stop position of the transfer belt.	Settings: –2~2 Unit = 2 mm Standard: 0
F-WEB-MD	Changes the ON/OFF sequence of the web solenoid when the fixing web solenoid is turned on. At present, the setting is always '1'.	Standard: 1
F-WEB (Note 1)	Changes the frequency at which the fixing web solenoid turns on.	Settings: 1~255 Standard: 8
CONT-SET (Note 1)	Use it to set the copy count at which copy count should start. For instance, if set to '100', the counter 3 will start to count in response to a press on the Start key as long as the copy count is set to '100' or lower.	Settings: 0~999 Standard: 100 The setting is effective only if DISPLAY>VERSION>CNT-MODE=7 (111).
REG-NEXT	Use it to delay the timing at which the sheet of paper is picked up to prevent lines in main scanning direction near 188mm from leading edge of paper. 0:normal operation 1:delay pickup timing REF. The potential on the transfer belt is not staple when the first copy is made, with the photosensitive drum at times developing paper traces (drum memory) caused by the leading edge of paper. The traces will collect toner, and a line will occur on the next copy near 188mm from its leading edge.	Standard:0

Note 1:
The value will return to the standard value when the RAM is initialized, requiring re-input. Be sure to record any new value on the service label.

3. REMOTE (machine settings with IPU in use)



```
                  <M> REMOTE  <S>          <R> READY    <P> READY    <F>

DISP      COUNTER    REMOTE
                          0
ADJUST

FUNC                 FREE-SZ
                          0
OPTION

TEST
```

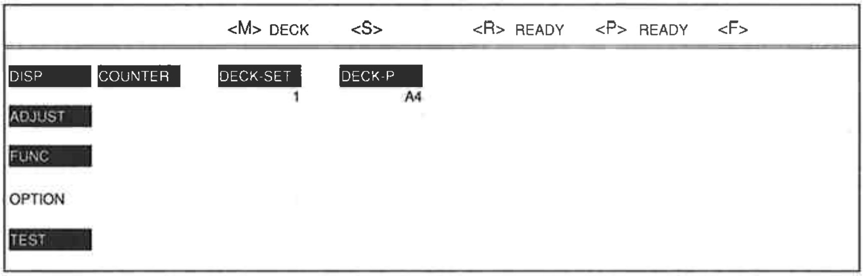
Item	Description	Remarks
REMOTE	Make the settings shown in A and B (table below): A: Use it to specify whether the Call key should have a remote function. If it is not used as a remote key, a command from the IPU starts remote state and then local state after execution. B: Use it to specify whether copying modes set in local state should be maintained when moving from local state to remote state.	Settings: 0~7 Standard: 0
FREE-SZ	Use it to enable printing on free-size paper from the PS-XJ1000. If set to '1', printing on free-size paper is enabled.	Standard:0

- Details of Settings

Setting	A	B
REMOTE = 0, 1	Keep as Call key.	Retain
2, 3	Keep as Call key.	Do not retain
4	Use as Remote key.	Retain
5	Use as Remote key.	Retain
6	Use as Remote key.	Do not retain
7	Use as Remote key.	Do not retain

Note 1:
You must enter the appropriate value whenever you have replaced the reader controller PCB or initialized a RAM; record any new values on the service label for this purpose.

4. DECK (settings for the Paper Deck)



<M> DECK <S> <R> READY <P> READY <F>

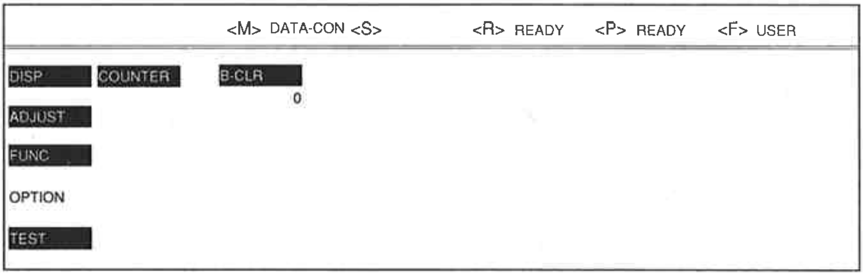
DECK-SET 1

DECK-P A4

Item	Description	Remarks
DECK-SET (Note 1)	Specifies the presence/absence of a paper deck. 0: Absent 1: Present	Standard: 1
DECK-P (Note 1)	Selects the size of paper used in the paper deck. Each press on the key scans through the sizes as follows: →A3→B4→11x17→B5→LTR→A4	Standard: A4

Note 1:
You must enter the appropriate value whenever you have replaced the reader controller PCB or initialized a RAM; record any new values on the service label for this purpose.

5. DATA-CON (disconnecting the Copy Data Controller-A1)

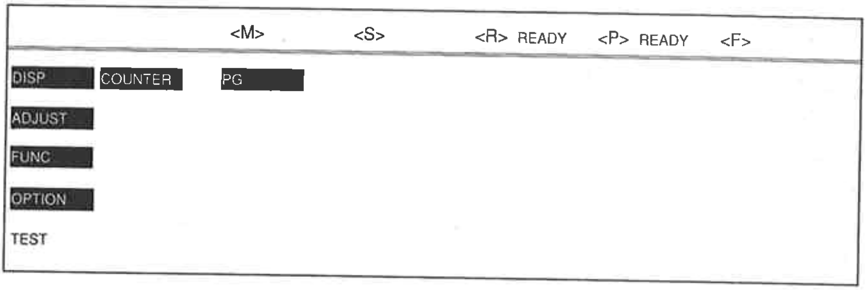


<M> DATA-CON <S> <R> READY <P> READY <F> USER

B-CLR 0

Item	Description	Remarks
B-CLR	Connecting the Copy Data Controller-A1 will automatically sets it to '1' from '0'. Be sure to set it to '0' when temporarily separating the Copy Data Controller-A1 during service work.	'E717' will be indicated if you separate the Copy Data Controller-A1 without setting it to '0'.

F. TEST PRINT (test print)



<M> <S> <R> READY <P> READY <F>

DISP COUNTER PG

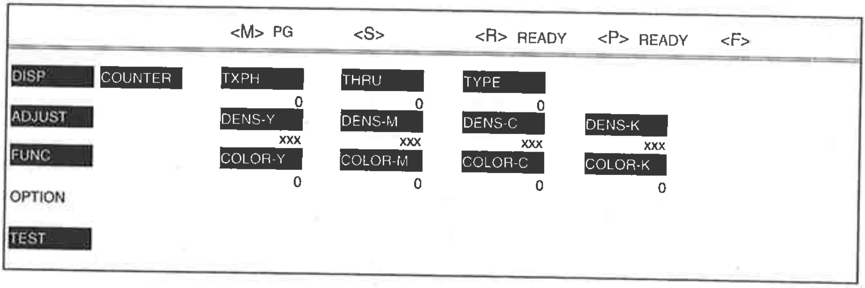
ADJUST

FUNC

OPTION

TEST

Item	Description	Remarks
PG	Generates test prints.	



<M> PG <S> <R> READY <P> READY <F>

DISP COUNTER TXPH 0 THRU 0 TYPE 0

ADJUST DENS-Y xxx DENS-M xxx DENS-C xxx DENS-K xxx

FUNC COLOR-Y 0 COLOR-M 0 COLOR-C 0 COLOR-K 0

OPTION

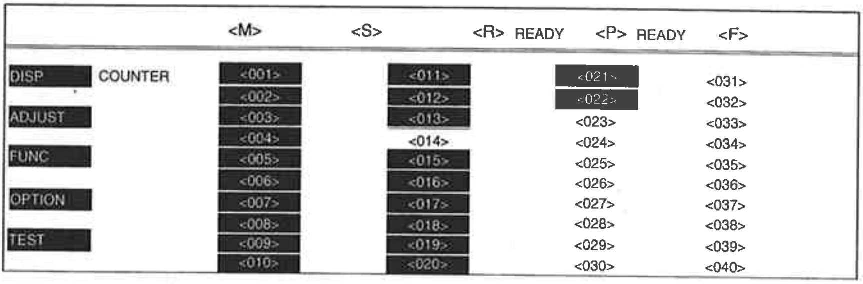
TEST

Item	Description	Remarks
TXPH	Switches between text mode and photo mode. 0: Text mode 1: Photo mode 2: Auto switching Not valid if TYPE is set to 6 (grid).	Each press causes the following sequential change. →0→1→2
THRU	Switches the gate array of the laser controller PCB. Not valid if TYPE is set to 5 (halftone). 0: Use gate array 1: Do not use gate array	Each press causes the setting to alternate between '0' and '1'.

<table>
<tr><th>Item</th><th>Description</th><th>Remarks</th></tr>
<tr><td>TYPE</td><td>Selects the type of test print.
<table>
<tr><th>PGTYPE</th><th>Description</th></tr>
<tr><td>0</td><td>Image from CCD (normal copying)</td></tr>
<tr><td>1</td><td>For R&D</td></tr>
<tr><td>2</td><td>256 colors</td></tr>
<tr><td>3</td><td>256 gradations</td></tr>
<tr><td>4</td><td>17 gradations</td></tr>
<tr><td>5</td><td>Full face halftone</td></tr>
<tr><td>6</td><td>Grid</td></tr>
<tr><td>7</td><td>Image position correction control pattern</td></tr>
<tr><td>8</td><td>For R& D</td></tr>
<tr><td>9</td><td>For R&D</td></tr>
<tr><td>10</td><td>MCYK horizontal stripe</td></tr>
<tr><td>11</td><td>For R&D</td></tr>
<tr><td>12</td><td>For R&D</td></tr>
<tr><td>13</td><td>For R&D</td></tr>
<tr><td>14</td><td>Full color 17 gradations</td></tr>
<tr><td>15</td><td>For R&D</td></tr>
<tr><td>16</td><td>Not used</td></tr>
<tr><td>17</td><td>For R&D</td></tr>
<tr><td>18</td><td>For R&D</td></tr>
<tr><td>19</td><td>For R&D</td></tr>
<tr><td>20</td><td>For R&D</td></tr>
<tr><td>21</td><td>For R&D</td></tr>
<tr><td>22</td><td>For R&D</td></tr>
</table></td><td>Enter the appropriate number (1 through 16) using the keypad, and press the Start key to generate test prints. In the case of 3, 4, 5, or 6, the color may be selected in color mode (user mode).
• Be sure to return the setting to 0 after generating the test print.</td></tr>
<tr><td>DENS-M/C/Y/K</td><td>Selects the density of each color for full face halftone for PGTYPE=5.</td><td>Settings: 0~255
Standard: 128</td></tr>
<tr><td>COLOR-Y/M/C/K</td><td>Use it to select the color to generate for each PG.
1: Generate.
0: Do not generate.</td><td>Standard value: 1</td></tr>
</table>

Be sure to set TYPE back to 0 when leaving test print mode.

G. COUNTER (counter)



<M> <S> <R> READY <P> READY <F>

DISP	COUNTER	<001>	<011>	<021>	<031>
		<002>	<012>	<022>	<032>
ADJUST		<003>	<013>	<023>	<033>
		<004>	<014>	<024>	<034>
FUNC		<005>	<015>	<025>	<035>
		<006>	<016>	<026>	<036>
OPTION		<007>	<017>	<027>	<037>
		<008>	<018>	<028>	<038>
TEST		<009>	<019>	<029>	<039>
		<010>	<020>	<030>	<040>

- After 999999, the reading returns to 000000.
- When a Level 3 item (except 038, 039, 040) is pressed and the Clear key is pressed after the item has been highlighted, the counter reading of the item will return to 000000.
- Check the value of Level 3 item 038 whenever you have replaced the cleaning web of the fixing assembly. If not 0, press E005-RLS under FUSER of FUNC to clear the counter reading.
  In addition, executing RAM-CLR for the reader controller PCB will reset all readings of the Level 3 items to 000000 (except 038, 039, 040).

Item	Description	Item	Description
001	Indicates the number of times the Y developing assembly has been used.	021	Indicates the number of copies made using the film projector. (reserved)
002	Indicates the number of times the M developing assembly has been used.	022	Indicates the number of pick-ups from the RF.
003	Indicates the number of times the C developing assembly has been used.	023	Reserved
004	Indicates the number of times the Bk developing assembly has been used.	024	Reserved
005	Indicates the number of Y-mono copies.	025	Reserved
006	Indicates the number of M-mono copies.	026	Reserved
007	Indicates the number of C-mono copies.	027	Reserved
008	Indicates the number of Bk-mono copies.	028	Reserved
009	Indicates the number of 3-color copies.	029	Reserved
010	Indicates the number of 4-color copies.	030	Reserved
011	Indicates the total number of copies.	031	Reserved
012	Indicates the total number or printouts.	032	Reserved
013	Indicates the number of sheets generated using the synthesis function.	033	Reserved
014	Indicates the total number of sheets (copies + printouts + synthesized printouts).	034	Reserved
015	Indicates the number of sheets picked up from cassette 1.	035	Reserved
016	Indicates the number of sheets picked up from cassette 2.	036	Reserved
017	Indicates the number of sheets picked up from Paper deck.	037	Reserved
018	Indicates the number of sheets picked up from the multifeeder.	038	Indicates the number of times the solenoid has turned ON from when the absence of web has been detected until E005 is indicated.(initially, '270'; incremented by 1 for each activation)
019	Indicates the number of sheets picked up from the duplexing unit.	039	Indicates the number of copies to be made until the next time the primary charging wire automatic cleaning mechanism turns on. (initially, '5000'; count down by 1 per copy)
020	Indicates the number of scans made by the scanner.	040	Indicates the number of copies to be made until the next time the polishing roller cleaning mechanism turns on.(initially, '5000'; count down by 1 per copy)

VIII. SELF DIAGNOSIS

The CPU on the CLC1000's image processor and DC controller PCB is equipped with a mechanism to check the condition of the machine (sensors, in particular). The mechanism runs a check as necessary and indicates the presence of an error upon detection.

See the tables that follow for descriptions of codes; you may check these codes using 'JAM/ERROR' under 'DISPLAY' in service mode.

'0001' will be used for the detailed code column of errors without a detailed code.

Code	Cause	Description	
E000	See the descriptions that follow.	"xx" represents the heater. xx=01: upper heater xx=02: lower heater	
	Fixing thermistor (short circuit) Triac (short circuit) DC controller PCB (faulty)	xx01	The overheating detection circuit on the DC controller PCB has detected an overheating condition (220°C or more).
		xx02	The thermistor has detected 210°C or more.
	Fixing thermistor (poor contact, open circuit) Fixing heater (open circuit) Triac (faulty) DC controller PCB (faulty)	xx20	When control is to 160°C or less, a rise in temperature of 10°C or more does not occur within 4 min.
		xx40	The temperature drops to 140°C or less during temperature control for standby.
		xx50	The temperature drops to 140°C or less during temperature control for printing.

Code	Cause	Description	
E004	Triac (short circuit)	0001	The triac is ON after the CPU on the DC controller PCB has turned ON the fixing heater triac drive signal.
		0002	The triac is ON after the microprocessor on the DC controller PCB has turned OFF the triac drive signal for the drum heater.
E005	• Cleaning web (inside fixing assembly; taken up) • Web length sensor (PS36; faulty) • DC controller PCB (faulty)	The cleaning web solenoid has turned ON 270 times after the web length sensor detected the lever.	
E006	• Fixing drawer connector (fault) • Fixing lever switch (SW5; fault) • DC controller PCB (fault)	0001	The fixing drawer connector connection signal CONNECT goes '0' when the front cover is closed (i.e., the drawer connector is disconnected).
		0002	The fixing lever switch signal F-KBLK goes '1' when the front cover is closed (i.e., the fixing knob is not set).
E012	• Drum drive system (overload) • Drum motor (M21; error) • DC controller PCB (faulty)	0001	The rotation speed of the motor has deviated from a specific value for 0.1 sec or more.
E013	• Waste toner feeding motor (faulty) • Waste toner feeding screw (rotation fault) • DC controller PCB (faulty)	0001	The rotation speed of the waste toner feeding motor has deviated from a specific value for 0.1 sec or more (PLL signal '0').
		0002	The waste toner lock detection switch (SW4) has been pressed for 0.1 sec or more.
E014	• Fixing motor (M9; error) • DC controller PCB (faulty)	The rotation speed of the motor has deviated from a specific value for 0.1 sec or more.	
E015	• Pick-up motor (M10; faulty) • DC controller PCB (faulty)	• The clock pulses of the pick-up motor cannot be detected. • The rotation speed of the motor has deviated from a specific speed for 0.1 sec or more.	
E017	• Duplexing feeding motor (M19; faulty) • DC controller PCB (faulty)	• The rotation speed of the duplexing feeding motor has deviated from a specific value for 0.1 sec or more (PLL signal '0').	
E018	• Polishing/oil removing motor (M15; faulty) • DC controller PCB (faulty)	• The rotation speed of the polishing/oil removing motor has deviated from a specific value for 0.1 sec or more.	

Code	Cause	Description	
E020	The descriptions are by detail code.	Toner Density Fault xx represents the color for the developing assembly. xx=01: Y xx=02: M xx=03: C xx=04: Bk The notations in the descriptions are as follows: SGNL, toner density signal; REF, reference signal.	
	• SALT sensor (faulty) • Stirring (developer inside developing assembly; faulty) • Stray light (to sensor; no cover, front cover open) • Photosensitive drum (deterioration)	xx3A	The variation of the following is 47 or more for 5 samplings of the density data when sampling during copying sequence: SGNL-S-Y, SGNL-S-M, SGNL-S-C, SGNL-S-K

Code	Cause	Description	
E020	• SALT sensor (faulty) • Stirring (developer inside developing assembly; faulty) • Stray light (to sensor; no cover, front cover open) • Photosensitive drum (deterioration) • SALT sensor (soiled window, damage) • Photosensitive drum (dirt; cleaning failure)	xx3B	The variation of the following is 47 or more for 5 samplings of the density data when sampling during copying sequence: REF-S-Y, REF-S-M, REF-S-C, REF-S-K
		xx40	When setting initial data (upon installation, for example), the average value after sampling of the following values is 848 or higher: SGNL-S-Y, SGNL-S-M, SGNL-S-C, SGNL-S-K; or, the value of SGNL-S-K is 352 or higher.
		xx41	When setting initial data (upon installation, for example), the average value after sampling of the following values is 848 or higher: REF-S-Y, REF-S-M, REF-S-C, REF-S-K; or, the value of REF-S-K is 544 or higher.
		xx42	When setting initial data (upon installation, for example), the value of the following is 255: SIGG-S-Y, SIGG-S-M, SIGG-S-C, SIGG-S-K
		xx43	When setting initial data (upon installation, for example), the gain of the SALT reference signal for each color is 255.
		xx45	When setting initial data (upon installation, for example), the average value after sampling of the following values is 512 or higher: SGNL-S-Y, SGNL-S-M, SGNL-S-C; or, the value of SGNL-S-K is 144 or lower.
		xx46	When setting initial data (upon installation, for example), the average value after sampling of the following values is 400 or less: REF-S-Y, REF-S-M, REF-S-C; or, the value of REF-S-K.
		xx47	When setting initial data (upon installation, for example), the average value after sampling of the following values is 0: SIGG-S-Y, SIGG-S-M, SIGG-S-C, SIGG-S-K.
		xx48	When setting initial data (upon installation, for example), the average gain after sampling of the SALT reference signal for each color is 0.

Code	Cause	Description	
E020	Back-up data (DC controller PCB; error) Be sure to execute RAM clear, and enter the value recorded on the service label. (Or, initial settings may be missing.)	xx4A	During copying sequence, the average value after sampling of the following values is 848 or higher: SGNL-S-Y, SGNL-S-C is 848 or higher; or, the value of SGNL-S-K is 445 or higher.
		xx4B	During copying sequence, the average value after sampling of the following values is 848 or higher; or the value of REF-S-K is 544 or higher.
		xx4C	During copying sequence, the average value after sampling of the following values is 512 or lower: SGNL-S-Y, SGNL-S-M, SGNL-S-C; or, the value of SGNL-S-K is 102 or lower.
		xx4D	During copying sequence, the average value after sampling of the following values is 336 or lower: REF-S-Y, REF-S-M, REF-S-C; or, the value of REF-S-K is 464 or lower.
	• SALT sensor (fault)	xx4F	The value of 'SGNL-S-Y/M/C/K', which has been obtained by averaging samplings during copying sequence is 1008 or more.
	• SALT sensor (faulty) • Stirring (developer inside developing assembly; faulty) • Stray light (to sensor; no cover, front cover open) • Photosensitive drum (deterioration)	xx50	When setting initial data (upon installation, for example), the gain cannot be set (i.e., no change is noted in the value of SGNL between GAIN: 20H and GAIN: E0).
		0455	An appropriate patch cannot be obtained when setting initial data (e.g., at time of installation).
	• SALT sensor (dirt on window, damage) • Photosensitive drum (dirt; cleaning failure)	xx60	During multiple initial rotation (at power-on, for example), the window cleaning correction value is 60% or lower.
		xx70	During multiple initial rotation (at power-on, for example), the window cleaning correction value is 140% or lower.

Code	Cause	Description	
E020	Back-up data (DC controller PCB; error) Be sure to execute RAM clear, and enter the value recorded on the service label. (Or, initial settings may be missing.)	xx80	During copying sequence, the initial setting for the following is 848 or higher because of an error in the memory back-up data: SGNL-S-Y, SGNL-S-M, SGNL-S-C; or, the value of SGNL-S-K is 352 or higher.
		xx81	During copying sequence, the initial setting for the following is 848 or higher because of an error in the memory back-up data: REF-S-Y, REF-S-M, REF-S-C; or, the value of REF-S-K is 544 or higher.
		xx82	During copying sequence, the value of the following is 255 because of an error in the memory back-up data: SIGG-S-Y, SIGG-S-M, SIGG-S-C, SIGG-S-K
		xx85	During copying sequence, the initial setting for the following is 512 or lower because of an error in the memory back-up data: SGNL-S-Y, SGNL-S-M, SGNL-S-C; or, the value of SGNL-S-K is 144 or lower.
		xx86	During copying sequence, the initial setting of the following is 336 or lower because of an error in the memory back-up data: REF-S-Y, REF-S-M, REF-S-C; or the value of REF-S-K is 464 or lower.
		xx87	During copying sequence, the value of the following is 0 because of an error in the memory back-up data: SIGG-S-Y, SIGG-S-M, SIGG-S-C, SIGG-S-K.
		xx88	During copying sequence, the data on the light (in the absence of toner) reflected by each photosensitive drum is 16 or lower because of an error in the memory back-up data.
		xx89	During copying sequence, the data for window soiling correction is 16 or lower because of an error in the memory backup data.
		xx8A	The value of ';REF-S-Y/M/C/K' which has been obtained by averaging samplings setting initial data is 16 or less.
		xx8F	During copying sequence, the gain of the SALT reference signal for each color is NOT 128 because of an error in the memory back-up data.

Code	Cause	Description	
E020	• SALT sensor shutter (fault)	xx90	Extreme changes have occurred in the window soiling correction value 10 times or more.
		xx91	An error has occurred in the data 10 times or more as a result of window soiling correction.
	• Developer (deterioration) • Developing cylinder (rotation failure) • Developing assembly (locking failure) • Toner density sensor (faulty) • Developer (inside developing assembly; stirring failure) • Toner level sensor (faulty)	xxAA	During copying sequence, the variation in 5 samplings of the following values is 47 or higher: SGNL-Y, SGNL-M, SGNL-C
		xxAB	During copying sequence, the variation in 5 samplings of the following values is 47 or higher: REF-Y, REF-M, REF-C
		xxB0	When setting initial data, the average after sampling of the following values is 859 or higher: SGNL-Y, SGNL-M, SGNL-C
		xxB1	When setting initial data, the average after sampling of the following values is 859 or higher: REF-Y, REF-M, REF-C
		xxB2	When setting initial data, the average after sampling of the following values is 255. SIGG-Y, SIGG-M, SIGG-C
		xxB5	When setting initial data, the average after sampling of the following values is 777 or lower: SGNL-Y, SGNL-M, SGNL-C
		xxB6	When setting initial data, the average of the following values after sampling is 205 or lower: REF-Y, REF-M, REF-C
		xxB7	When setting initial data, the average of the following values after sampling is 0: SIGG-Y, SIGG-M, SIGG-C
		xxBA	During copying sequence, the average of the following values after sampling is 1013 or higher: SGNL-Y, SGNL-M, SGNL-C

Code	Cause	Description	
E020	• Developing assembly (deterioration) • Developing cylinder (rotation failure) • Developing assembly (locking failure) • Toner density sensor (faulty) • Developer (inside developing assembly; stirring fault) • Toner level sensor (faulty)	xxBB	During copying sequence, the value of the following is 30% or more higher than the initial setting: REF-Y, REF-M, REF-C
		xxBC	During copying sequence, the average of the following values after sampling is 306 or higher: SGNL-Y, SGNL-M, SGNL-C
		xxBD	During copying sequence, the value of the following is 30% or more lower than the initial setting: REF-Y, REF-M, REF-C
		xxBF	When setting initial data, the values of the following cannot be set: SIGG-Y, SIGG-M, SIGG-C
	• Toner detect sensor (faulty) • Toner stirring screw (faulty)	xxF1	The Y/M/C hopper error sensor has detected the absence of toner.
		04F2	The Bk hopper error sensor has detected the absence of toner 10 times or more continuously.
	• Developer (deterioration) • Developing cylinder (rotation failure) • Toner density sensor (faulty) • Developer (inside developing assembly; stirring fault) • Toner level sensor (faulty)	xxD0	The value of the toner supply time correction data based on 'SGNL-Y/M/C' is 141 or more for 20 copies or more during copying sequence.
		xxE0	The value of the toner supply time correction data based on 'SGNL-Y/M/C' is –188 or less for 20 copies or more during copying sequence.

Code	Cause	Description	
E023	• Developing motor (faulty) • DC controller PCB (faulty) • Developing cylinder (rotation failure)	0101	The rotation speed of the Y developing motor (M18Y) has deviated from a specific value for 0.1 sec or more (PLL signal '0').
		0201	The rotation speed of the M developing assembly (M18M) has deviated from a specific value for 0.1 sec or more (PLL signal '0').
		0301	The rotation speed of the C developing motor (M18C) has deviated from a specific value for 0.1 sec or more (PLL signal '0').
		0401	The rotation speed of the Bk developing motor (M18Bk) has deviated from a specific speed for 0.1 sec or more (PLL signal '0').
E030	• Counter (open circuit) • DC controller PCB (faulty)	Check immediately before the counter turns ON and OFF. (Normal if the counter drive signal is '0' when the counter turns ON; normal if the counter drive signal is '1' when the counter turns OFF.)	
E032	Data communication (error between Copy Data Controller-A1 and copier)	After the copier has generated the copy start signal, count pulses have not been detected by the data Controller-A1 within a specific period of time.	

Code	Cause	Description	
E040	• Multifeeder motor (M1; faulty) • DC controller PCB (faulty)	0101	• The upper lifter sensor (PS2) does not turn ON within 6 sec after the multifeeder lifter motor (M1) has turned ON.
		0102	• The lower lifter sensor (PS3) does not turn ON within 6 sec after the multifeeder lifter motor (M1) has turned ON.
E041	• Paper deck motor (M8001; faulty) • Paper deck lifter upper switch (SW8001; faulty) • Paper deck lifter lower limit switch (SW8002; faulty) • DC controller PCB (faulty)	0001	• The paper deck lifter upper limit switch (SW8001) does not turn on within 40 sec after the paper deck motor (M8001) has turned ON.
		0002	• The paper deck lifter lower switch (SW8002) does not turn on within 40 sec after the paper deck motor (M8001) has turned ON.
E044	• Slide resistor is faulty (when the paper width set for the cassette or the multifeeder is wrong)	0001	• The paper width for multifeeder is wrong.
		0002	• The paper width for cassette 1 is wrong.
		0003	• The paper width for cassette 2 is wrong.
E050	• Duplexing unit stacking guide motor (M23; faulty) • Duplexing unit stacking guide home position sensor (PS29; faulty) • DC controller PCB (faulty)	0001	• The duplexing unit stacking guide home position sensor (PS29) does not turn ON within 4 sec after the duplexing unit stacking guide motor (M23) has turned ON.
		0002	• The duplexing unit stacking guide home position sensor (PS29) remains ON for 1 sec or more after the duplexing unit stacking guide motor (M23) has turned ON.

Code	Cause	Description	
E061		Potential Control Fault high-order 2 digits xx=00:common error xx=01:Y xx=02:M xx=03:C xx=04:Bk	
	• Potential measurement unit (faulty) • DC controller PCB (faulty) • Pre-exposure lamp (fault) • Pre-exposure lamp (faulty)	xx01	The difference between VD1 measured during the 1st rotation and VD1 measured during the 2nd rotation is 30 V or more.
		xx02	The difference between VD2 measured during the 1st rotation and VD2 measured during the 2nd rotation is 30 V or more.
		xx03	The difference between VL1 measured during the 1st rotation and VL1 measured during the 2nd rotation is 30 V or more.
		xx04	The difference between VL2 measured during the 1st rotation and VL2 measured during the 2nd rotation is 30 V or more.
	• Primary/Pre-primary charging assembly (faulty) • HVDC (faulty) • Pre-exposure lamp (faulty)	xx10	The measurement of VD1 is 500 V or higher and, in addition, the measurement of VD2 is 900 V or higher.
	• Primary charging assembly (faulty) • HVDC (faulty)	xx11	The measurement of VD1 is 900 V or higher and, in addition, the measurement of VD2 is 900 V or higher.
	• Video controller PCB (faulty) • Laser unit (faulty)	xx12	The measurement of VD1 is 200 V or lower and, in addition, the measurement of VD2 is 600 V or lower.
		xx13	The measurement of VD1 is 150 V or lower and, in addition, the measurement of VD2 is 300 V or lower.
	• Primary charging assembly (faulty) • HVDC (faulty)	xx14	The measurement of VD1 is 150 V or lower and, in addition, the measurement of VD2 is 150 v or lower.
	• Potential measurement unit (faulty) • DC controller PCB (faulty)	xx15	The measurement of VD1, VD2, VL1, or VL2 is 10 V or lower.

Code	Cause	Description	
E061	• Video controller PCB (faulty) • Laser unit (faulty) • Scanner (faulty)	xx16	The difference between VD1 and VL1 measurements is 20 V or less and, in addition, the measurement of VD1 is 200 V or more. The difference between VD2 and VL2 measurements is 200 V or less and, in addition, the VD2 measurement is 600 V or higher.
	• Video controller PCB (faulty) • Laser intensity (poor adjustment) • Laser unit (faulty)	xx17	The VL1 measurement is 200 V or higher and, in addition, the VL2 measurement is 400 V or higher.
	• Laser unit (faulty) • Laser shutter (faulty) • Photosensitive drum (faulty) • Scanner (faulty) • Video controller PCB (faulty) • Laser intensity (adjustment faulty)	xx21	The computation value of Vdc is the upper limit value (750 V) or higher.
		xx22	The computation value of Vg is the upper limit value (950 V) or higher.
		xx23	The computation value of V00 is the upper limit value (950 V) or higher.
	• Potential measurement unit (faulty) • HVDC (faulty) • Laser unit (faulty) • Video controller PCB (faulty) • Laser intensity (adjustment fault)	xx24	The computation value of Vdc is the lower limit value (200 V) or lower.
		xx25	The computation value of V00 is the lower limit value (325 V) or lower.
		xx26	The computation value of Vg is the lower limit value (250 V) or lower.
		xx27	The computation value of VFF is the lower limit value (700 V) or lower.
		xx28	The computation value of VFF is the lower limit value (0 V) or lower.

Code	Cause	Description	
E061	• Video controller PCB (faulty) • Laser unit (faulty) • Laser intensity (adjustment fault) • Photosensitive drum (faulty) • Scanner (faulty) • Potential measurement unit (faulty) • HVDC (faulty)	xx30	The measurement of VD1 is 400 V or higher.
		xx31	The measurement of VD1 is 200 V or lower.
		xx32	The measurement of VD2 is 800 V or higher.
		xx33	The measurement of VD2 is 500 V or lower.
		xx34	The measurement of VL1 is 200 V or higher.
		xx35	The measurement of VL2 is 400 V or more.
		xx36	The measurement of VL2 is 0 V or lower.
	• Potential measurement unit (faulty) • DC controller PCB (faulty)	xx50	The difference between the computation value of VD measured previously and the computation value of VL measured currently is 30 V or more.
		xx51	The difference between the computation value of Vg measured previously and the computation value of Vg measured currently is 30 V or more.
	• Potential measurement unit (faulty) • HVDC (faulty) • Video controller PCB (faulty) • Laser unit (faulty) • Laser shutter (faulty) • Scanner (faulty) • Environment sensor (faulty) • Photosensitive drum (faulty) • Photosensitive drum (poor grounding)	xx52	The computation value of V00 is the upper limit value (950 v) or higher.
		xx53	The computation value of V00 is the lower limit value (325 V) or lower.

Code	Cause	Description	
E062		Drum Temperature Control Fault xx=00: common error xx=01:Y xx=02:M xx=03:C xx=04:Bk	
	• DC controller PCB (faulty) • AC driver (faulty)	xx01	The drum temperature is 57°C or more for 0.5 sec or more.
		xx02	The drum temperature has dropped below 15°C or less after it has reached a specific temperature.
	• Drum thermistor (faulty)	0010	The drum thermistor has an open circuit or a short circuit.
E070	• DC controller PCB (faulty) • Transfer belt home position sensor (faulty)	0001	The transfer belt home position cannot be detected within a specific period of time (20 sec).
		0002	The transfer belt home position is detected longer than a specific period of time (2 sec).
E072	• Belt cleaner drive motor • Transfer belt unit • DC controller	The sensor output does not change after a specific period of time (6 sec).	
E073	• Transfer drawer connector (fault) • DC controller PCB (fault) • Transfer belt end sensor (fault)	0001	The connect signal CONNECT of the transfer assembly frame goes '0' when the front cover is closed.
		0002	The transfer belt end sensor 4 (PS20) and the transfer belt end sensor 1 (PS17) detected the belt at the same time.
		0003	The transfer belt end sensor 3 (PS19) and the transfer belt end sensor 2 (PS18) detected the belt at the same time.
		0004	The transfer belt end sensor 3 (PS19) and the transfer belt end sensor 4 (PS20) detected the belt at the same time.
		0005	The transfer belt end sensor 1 (PS17) and the transfer belt end sensor 2 (PS18) detected the belt at the same time.

Code	Cause	Description	
E074	• Transfer belt lifter sensor 1 (PS12), 2 (PS13) • Pick-up motor (M10; faulty) • Transfer belt lifter clutch (CL17; faulty) • DC controller PCB (faulty)	The transfer belt lifter sensor 1 (PS12) or 2 (PS13) does not go '1' (ON) within a specific period of time after the transfer belt lifter clutch (CL17) has turned ON.	
E075	• Transfer belt end sensor 1 (PS17; fault) • Transfer belt end sensor 2 (PS18; fault) • Transfer belt end sensor 1 (PS19; fault) • Transfer belt end sensor 2 (PS20; fault) • Transfer belt swing motor (M13; fault) • DC controller PCB (fault)	0001	The transfer belt end sensor 1 (PS17) does not turn off 600 sec after it has detected the belt.
		0002	The transfer belt end sensor 2 (PS18) does not turn off 600 sec after it has detected the belt.
		0003	The transfer belt end sensor 3 (PS19) detected the transfer belt.
		0004	The transfer belt end sensor 4 (PS20) detected the transfer belt.
E076	• Transfer belt cleaning web (taken up) • Web length sensor (faulty) • DC controller PCB (faulty)	A load is imposed on the web motor (M12) because of a shortage of web, causing the web rotation sensor (PS10) to detect a rotation fault.	
E100	• Laser unit (faulty) • Laser driver PCB (faulty) • Image processor PCB (faulty)	xx01	At the start of potential control, the BD signal is not detected for 1 sec or more.
		xx02	The operation ON current used to obtain optimum intensity is larger than a specific value.
E110	• Laser scanner drive system (overload) • Laser scanner motor (M4; faulty) • DC controller PCB (faulty)	The rotation speed of the motor has deviated from a specific value for 0.1 sec or more.	

Code	Cause	Description	
E194	• CCD unit for pattern reading (faulty) • PCB for pattern reading (faulty) • DC controller PCB (faulty) In addition, a fault in the primary charging as sembly or the transfer belt may have prevented the formation of a pattern.	xx01	The center of a pattern cannot be determined.
		xx02	The center position (difference) in relation to the M pattern is 61 or more in main scanning direction.
		xx03	The center position (difference) in relation to the M pattern is 113 or more for Y and Bk and 141 or more for C in sub scanning direction.
		0001	After the shutter motor has started to rotate, the shutter open sensor does not turn on after a specific period of time.
		0002	After the shutter motor has started to rotate, the shutter closed sensor does not turn on after a specific period of time.
E220	The scanning lamp has deteriorated or has an open circuit. • The lamp regulator PCB (faulty) • The reader controller PCB (faulty)	• The scanning lamp lights in stand-by mode despite that the reader controller PCB does not send the scanning lamp ON signal. • The scanning lamp goes OFF during copying despite that the reader controller PCB sends out the scanning lamp ON signal.	
E260	• DC power supply PCB unit (faulty) • DC controller PCB (faulty) • DC power supply cooling fan (faulty)	0001	When the power switch is turned ON, 5V is not present on the DC controller PCB.
		0002	When the main switch is turned on with the front cover closed, 24 V is not present on the DC controller PCB.
		0003	The thermal switch has detected overheating of the 5V system on the DC power supply PCB.
		0004	The thermal switch has detected overheating in the 24VR system on the DC power supply PCB.
		0005	The thermal switch has detected overheating in the 24VU system on the DC power supply PCB.
		0006	The DC power supply cooling fan is not rotating normally.
E350	• Bar code label (faulty or absent) • Image processor PCB (faulty) • ECO PCB (faulty)	During the first copying operation after the power switch has been turned ON, the presence of a bar code label is not confirmed during a check on the standard white plate.	
E351	• Image processor PCB (faulty) • ECO PCB (faulty) • Connection (between image processor and ECO CPB)	• The ECO PCB and the image processor PC are not connected. • The combination of the ROMs on the ECO PCB is wrong.	
E352	• Bar code label (faulty or absent)	During the execution of 'ADUTO-ADJ' in service mode, the bar code on the standard white plate cannot be read.	

RF

The CPU on the RF's controller PCB is equipped with a mechanism to check the condition of the machine (sensors, in particular).

The mechanism runs a check as necessary and indicates on the copier's control panel the presence of an error upon detection.

Code	Cause	Description
E400	• Data communication with copier (faulty)	• Communication with the copier is monitored at all times. The communication is disrupted for 5 sec or more.
E401	• Pick-up motor (M1; faulty) • Pick-up roller home position sensor 1 (S8; faulty)	• The sensor state does not change even after the pick-up motor has been driven for more than 2 sec.
E402	• Belt motor (M3; faulty) • Belt motor clock sensor (S11; faulty)	• The number of belt motor clock pulses is less than a specific value for 100 ms.
E403	• Reversing motor (M2; faulty) • Slip sensor (S10; faulty)	• The number of slip clock pulses is below a specific value for 100 ms.
E404	• Delivery motor (M5; faulty) • Delivery motor clock sensor (S12; faulty)	• The number of delivery motor clock pulses is below a specific value for 200 ms.
E405	• Pick-up motor (M1; faulty) • Pick-up motor clock sensor (S12; faulty)	• The number of pick-up motor clock pulses is below a specific value for 200 ms.
E407	• Pick-up motor (M6; faulty) • Tray position sensor (S25; faulty)	• The sensor state does not change even the tray ascent motor is driven for 2 sec or more.
E408	• Feeding motor (M8; faulty) • Feeding motor clock sensor (S22; faulty)	• The number of feeding motor clock pulses is below a specific value for 100 ms.
E411	• Registration sensor 1 (S3; faulty) • Skew sensor 1 (S4; faulty) • Manual feed registration sensor (S19; faulty) • Image leading edge sensor (S20; faulty) • Original sensor 1 (S7; faulty)	• The output of each sensor in the absence of paper is higher than a specific value.

Sorter

Code	Cause	Description	
E510	• Feeding motor (M8; faulty)	• There is no clock signal from the clock sensor (PI5) of the feeding motor for 250 ms or more.	
E516	• Low-speed feeding motor (M10; faulty)	• There is no clock signal from the clock sensor (PI23) of the feeding motor for 250 ms or more.	
E517	The locking cam of the buffer path unit fails to reach home position.	0001	The buffer sensor 1 does not detect the position of the locking cam at the correct timing (i.e., the sensor 1 may be considered to be damaged; the sensor 2 operates normally).
		0002	The buffer sensor 2 does not detect the position of the locking cam at the correct timing (i.e., the sensor 2 may be considered to be damaged; the sensor 1 operates normally).
		0003	The buffer sensor (1, 2) does not detect the position of the locking cam at the correct timing (i.e., the sensor 1/2 or the locking solenoid 1/2 may be considered to be damaged).
		0004	The buffer sensor 1/2 does not detect the position of the locking cam at the correct timing (i.e., either the locking cam solenoid 1 or solenoid 2 or both are considered to be damaged).
		0005	The buffer sensor 1/2 does not detect the position of the locking cam at the correct timing (i.e., either the buffer sensor or the locking cam solenoid or both may be considered to be damage).
E522	• Push bar motor (M7; rotation failure)	• The operation does not end within 2000 ms after the motor drive signal has been generated.	
E523	• Reference wall motor (M6; rotation failure)	• The operation does not end within 2000ms after the motor drive signal has been generated.	

Code	Cause	Description
E524	• Multi guide motor (M5; rotation failure)	• The operation does not end within 2000 ms after the motor drive signal has been generated.
E525	• Bin paper sensor 1 (S3, S4; auto adjustment fault)	• Auto adjustment of the bin paper sensor 1 (S3, S4) cannot be executed; or, an error has occurred in the auto adjustment value.
E526	• Bin paper sensor 2 (S6, S7; auto adjustment)	• Auto adjustment of the bin paper sensor (S6, S7) cannot be executed; or, an error has occurred in the auto adjustment value.
E530	• Guide bar motor (M8 rotation failure)	• The operation does not end within a specific time after the motor drive signal has been generated: 5000 ms if front retrieval, and generated and 2000 ms otherwise.
E531	• Stapler unit drive motor (M4; rotation failure)	• The operation does not end within 2000 ms after the motor drive signal has been generated. • There is no clock signal from the clock sensor (PI8) of the motor for 250 ms or more. • The input signal from the shifting home position sensor (PI9) for 1000 ms or more.
E532	• Stapler unit shift motor (M3; rotation failure)	• The operation does not end within 5000 ms after the motor drive signal has been generated.
E533	• Stapler paper sensor auto adjustment (faulty)	• Auto adjustment of the stapler paper sensor cannot be executed; or, an error has occurred in the auto adjustment value.
E540	• Bin shift motor (M9; rotation failure)	• The operation does not end within a specific period of time after the motor drive signal has been generated: 20000 ms during initialization, and 2000 ms otherwise. • There is no clock signal from the clock plate sensor of the motor for 250 ms or more. • The input signal from the lead cam position sensor (PI20) does not change for 2000 ms or more.
E550	• DC output (from sorter controller; faulty)	• An error has occurred in the DC output (24 VL, 24 VP) from the sorter controller PCB.

Code	Cause	Description
E620	IP-ED PCB (faulty) IP-MAIN PCB (faulty)	The communication between the IP-ED PCB and the IP-MAIN PCB is interrupted for 5 sec or more.
E633 (TYPE1)	IP-PRJ PCB (faulty) IP-MAIN PCB (faulty) Film projector PCB (faulty)	The communication between the IP-MAIN PCB and the film projector is interrupted for 5 sec or more.
E718 (TYPE2)		
E634	Film projector lamp (faulty)	See the Service Manual for the film projector.
E700	DC controller PCB (faulty) Reader unit controller PCB (faulty) Power supply PCB (faulty)	The communication between the DC controller PCB and the reader unit controller PCB is disrupted for 5 sec or more.
E800	Power switch DC controller PCB DC harness	An interruption in the auto shut-off signal is detected for 1 sec or more.
E804	Power supply unit (DCP1) cooling fan (error)	The rotation of the cooling fan for the power supply unit (DCP1) has stopped.

REF.

1. If the self diagnosis mechanism has been activated, you can reset the machine by turning its power switch off and then on.
   This, however, does not apply to 'E000'; if allowed with the thermistor out of order, such would heat and damage the fixing roller.
2. If 'E005' (ADD CLEANING BELT) is indicated, replace the cleaning web and execute 'E005-RLS' of 'FUSER' under 'FUNC' in service mode.
3. Even after clearing the E indication by turning off the power switch, a description of the last E indication may be checked using 'JAM/ERROR' under 'DISPLAY'in service mode.

- Clearing E000

1) Start service mode, and select 'FUSER' under 'FUNC'.
2) Press 'E000-RLS'.
3) Turn off and then on the power switch.

- Clearing E005

1) Start service mode, and select 'FUSER' under 'FUNC'.
2) Press 'E005-RLS'.
3) Turn off and then on the power switch.

- Clearing E075

1) Start service mode, and select 'F-MISCp' under 'FUNC'.
2) Press 'E075-RLS'.
3) Turn off and then on the power switch.

- Clearing 'E004'

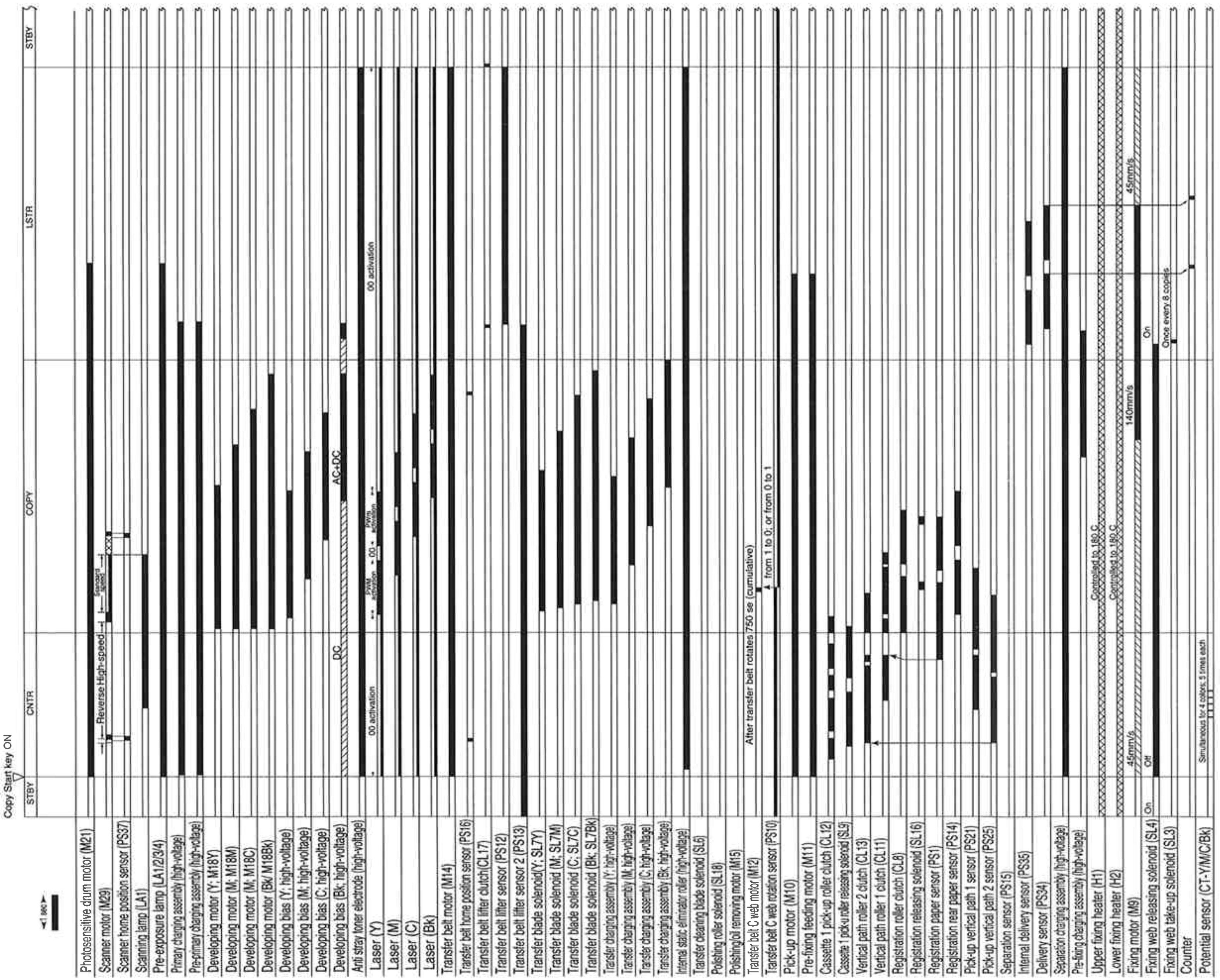
1) Turn off the power switch.
2) Disconnect and connect the power plug from and to to the power outlet.
3) Turn on the power switch.

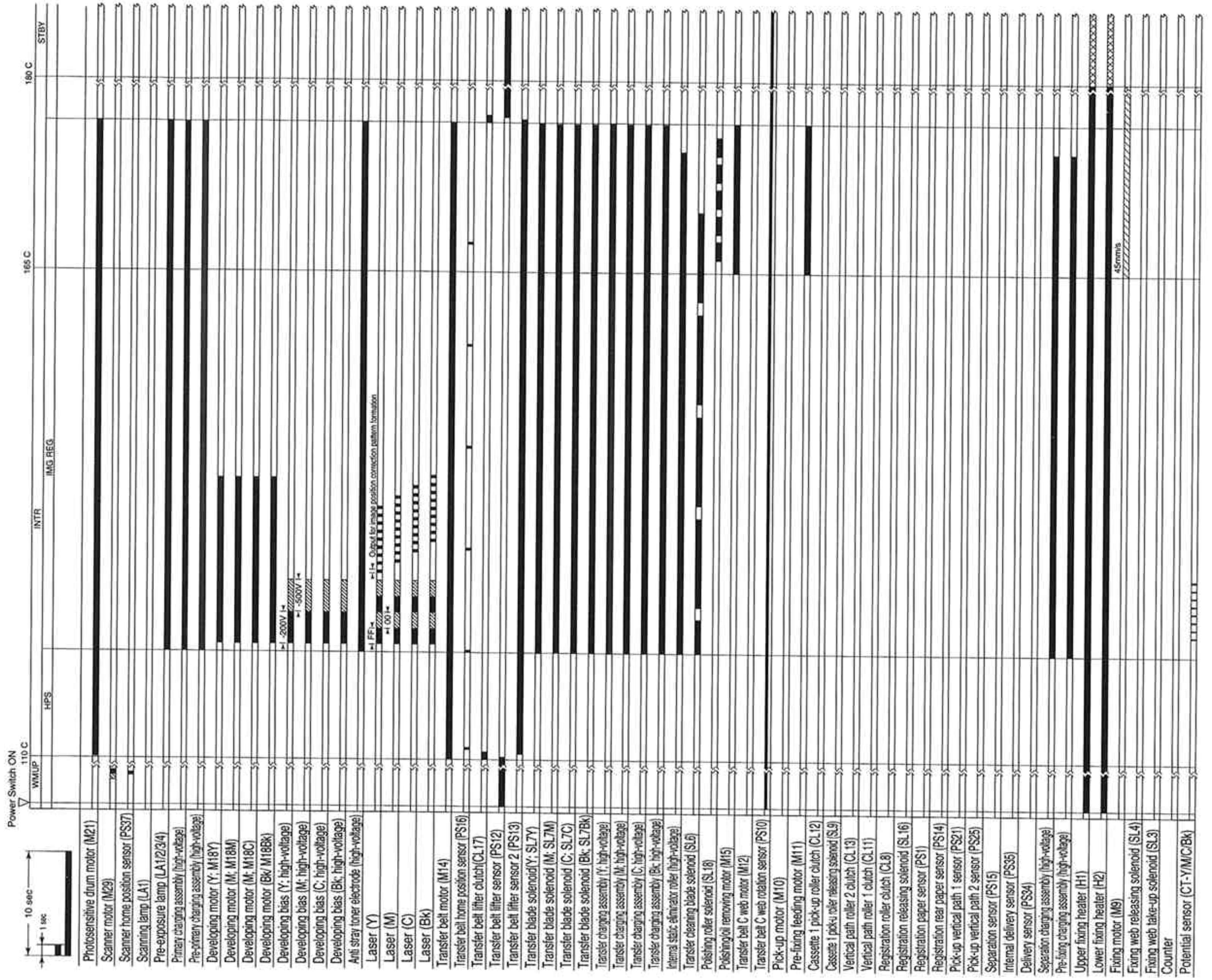
APPENDIX

A. GENERAL TIMING CHART A-1
B. SIGNALS AND ABBRIVIATIONS A-3
C. GENERAL CIRCUIT DIAGRAM A-11
D. DC CONTROLLER CIRCUIT DIAGRAM A-15
E. READER CONTROLLER PCB A-51
F. CCD DRIVER CIRCUIT DIAGRAM A-66
G. HVT CIRCUIT DIAGRAM A-70
H. SPECIAL TOOLS A-82
I. SOLVENTS AND OILS A-84

CANON CLC1000/1000S/3100 REV.2 MAY 2001 PRINTED IN JAPAN (IMPRIME AU JAPON)

A. GENERAL TIMING CHART



 10 sec
1 sec
Power Switch ON
110 C
165 C
180 C
WMUP
HPS
INTR
IMG REG
STBY
-200V
-500V
FF
100
1
Output for image position correction pattern formation
45mm/s
Photosensitive drum motor (M21)
Scanner motor (M29)
Scanner home position sensor (PS37)
Scanning lamp (LA1)
Pre-exposure lamp (LA1/2/3/4)
Primary charging assembly (high-voltage)
Pre-primary charging assembly (high-voltage)
Developing motor (Y; M18Y)
Developing motor (M; M18M)
Developing motor (M; M18C)
Developing motor (Bk/ M18Bk)
Developing bias (Y; high-voltage)
Developing bias (M; high-voltage)
Developing bias (C; high-voltage)
Developing bias (Bk; high-voltage)
Anti stray toner electrode (high-voltage)
Laser (Y)
Laser (M)
Laser (C)
Laser (Bk)
Transfer belt motor (M14)
Transfer belt home position sensor (PS16)
Transfer belt lifter clutch(CL17)
Transfer belt lifter sensor (PS12)
Transfer belt lifter sensor 2 (PS13)
Transfer blade solenoid(Y; SL7Y)
Transfer blade solenoid (M; SL7M)
Transfer blade solenoid (C; SL7C)
Transfer blade solenoid (Bk; SL7Bk)
Transfer charging assembly (Y; high-voltage)
Transfer charging assembly (M; high-voltage)
Transfer charging assembly (C; high-voltage)
Transfer charging assembly (Bk; high-voltage)
Internal static eliminator roller (high-voltage)
Transfer cleaning blade solenoid (SL6)
Polishing roller solenoid (SL18)
Polishing/oil removing motor (M15)
Transfer belt C web motor (M12)
Transfer belt C web rotation sensor (PS10)
Pick-up motor (M10)
Pre-fixing feeding motor (M11)
Cassette 1 pick-up roller clutch (CL12)
Cassette 1 pick-u roller releasing solenoid (SL9)
Vertical path roller 2 clutch (CL13)
Vertical path roller 1 clutch (CL11)
Registration roller clutch (CL8)
Registration releasing solenoid (SL16)
Registration paper sensor (PS1)
Registration rear paper sensor (PS14)
Pick-up vertical path 1 sensor (PS21)
Pick-up vertical path 2 sensor (PS25)
Separation sensor (PS15)
Internal delivery sensor (PS35)
Delivery sensor (PS34)
Separation charging assembly (high-voltage)
Pre-fixing charging assembly (high-voltage)
Upper fixing heater (H1)
Lower fixing heater (H2)
Fixing motor (M9)
Fixing web releasing solenoid (SL4)
Fixing web take-up solenoid (SL3)
Counter
Potential sensor (CT-Y/M/C/Bk)

B. SIGNALS AND ABBREVIATIONS

Signals

ATRLON-C	C-TONER SENSOR LED ON command
ATRLON-M	M-TONER SENSOR LED ON command
ATRLON-Y	Y-TONER SENSOR LED ON command
ATRREF-C	C-TONER REFERENCE signal
ATRREF-M	M-TONER REFERENCE signal
ATRREF-Y	Y-TONER REFERENCE signal
ATRSG-C	C-TONER CONCENTRATION signal
ATRSG-M	M-TONER CONCENTRATION signal
ATRSG-Y	Y-TONER CONCENTRATION signal
C1PW	CASSETTE 1 PAPER WIDTH VR signal
C1SZ0	CASSETTE 1 PAPER LENGTH SENSOR UNIT 0 signal
C1SZ1	CASSETTE 1 PAPER LENGTH SENSOR UNIT 1 signal
C2PW	CASSETTE 2 PAPER WIDTH VR signal
C2SZ0	CASSETTE 2 PAPER LENGTH SENSOR UNIT 0 signal
C2SZ1	CASSETTE 2 PAPER LENGTH SENSOR UNIT 1 signal
CDATA*	COPY DATA signal
CDRHD	C-DRUM HEATER ON command
CL1D*	Y-TONER SUPPLY CLUTCH command
CL2D*	M-TONER SUPPLY CLUTCH command
CL3D*	C-TONER SUPPLY CLUTCH command
CL4D*	BK-TONER SUPPLY CLUTCH (UPPER) command
CL5D*	BK-TONER SUPPLY CLUTCH (LOWER) command
CL6D*	MULTIFEEDER PICK-UP CLUTCH command
CL7D*	PAPER THICKNESS DETECT ROLLER CLUTCH command
CL8D*	REGISTRATION ROLLER CLUTCH command
CL10D*	DUPLEXING UNIT PICK-UP ROLLEER CLUTCH command
CL11D*	PICK-UP VERTICAL PATH ROLLER 1 CLUTCH command
CL12D*	CASSETTE 1 PICK-UP ROLLER CLUTCH command
CL13D*	PICK-UP VERTICAL PATH ROLLER 2 CLUTCH command
CL14D*	CASSETTE 2 PICK-UP ROLLER CLUTCH command
CL15D*	PICK-UP VERTICAL PATH ROLLER 3 CLUTCH command
CL16D*	PAPER REVERSING CLUTCH command
CL17D*	TRANSFER BELT LIFTER CLUTCH command
CNT1D*	COUNTER-1 command
CNT2D*	COUNTER-2 command
CNT3D*	COUNTER-3 command
CNT4D*	COUNTER-4 command
CNT5D*	COUNTER-5 command
CNT6D*	COUNTER-6 command
CSTHD	CASSETTE HEATER ON command
CTEPL*	C-TONER LEVEL SENSOR signal (LOWER)
CTEPU*	C-TONER LEVEL SENSOR signal (UPPER)
DACK*	DATA ACKNOWLEDGE signal
DREQ*	DATA REQUEST signal
EPC-C	C-DRUM POTENTIAL SENSOR signal

EPC-K	BK-DRUM POTENTIAL SENSOR signal
EPC-M	M-DRUM POTENTIAL SENSOR signal
EPC-Y	Y-DRUM POTENTIAL SENSOR signal
EVHUM	ENVIRONMENT SENSOR HUMIDITY signal
EVRMT	ENVIRONMENT SENSOR REMOTE signal
EVTEMP	ENVIRONMENT SENSOR TEMPERATURE signal
F-KBLK*	FIXING ASSEMBLY KNOB SWITCH signal
FM1D*	DELIVERY UNIT COOLING FAN 1 command
FM1SPD	DELIVERY UNIT COOLING FAN 1 SPEED CONTROL command
FM2D*	DELIVERY UNIT COOLING FAN 2 command
FM2SPD	DELIVERY UNIT COOLING FAN 2 SPEED CONTROL command
FM3D*	DELIVERY UNIT COOLING FAN 3 command
FM3SPD	DELIVERY UNIT COOLING FAN 3 SPEED CONTROL command
FM4D*	LASER UNIT COOLING FAN (FRONT) command
FM5D*	LASER UNIT COOLING FAN (REAR) command
FM6D*	PRIMARY CORONA ASSEMBLY EXHAUST FAN command
FM7D*	PRE-FIXING ASSEMBLY FEEDER FAN command
FM8D*	PRIMARY CORONA ASSEMBLY SUCTION FAN (LEFT) command
FM9D*	PRIMARY CORONA ASSEMBLY SUCTION FAN (RIGHT) command
FM10/11D*	SCANNER COOLING FAN 1/2 command
FM10-13D*	SCANNER COOLING FAN (FM10-13) command
FM12D*	SCANNER COOLING FAN 3 command
FM13D*	SCANNER COOLING FAN 4 command
FM19D*	LOWER DELIVERY UNIT COOLING FAN 1 command
FM20D*	LOWER DELIVERY UNIT COOLING FAN 2 command
FRDC*	FRONT COVER SWITCH signal
HVAC-C	C-DEVELOPING BIAS-AC command
HVAC-K	BK-DEVELOPING BIAS-AC command
HVAC-M	M-DEVELOPING BIAS-AC command
HVAC-Y	Y-DEVELOPING BIAS-AC command
HVACEN	DEVELOPING BIAS-AC ENABLE signal
HVDC-C	C-DEVELOPING BIAS-DC command
HVDC-K	BK-DEVELOPING BIAS-DC command
HVDC-M	M-DEVELOPING BIAS-DC command
HVDC-Y	Y-DEVELOPING BIAS-DC command
HVDCEN-C	C-DEVELOPING BIAS-DC ENABLE signal
HVDCEN-K	BK-DEVELOPING BIAS-DC ENABLE signal
HVDCEN-M	M-DEVELOPING BIAS-DC ENABLE signal
HVDCEN-Y	Y-DEVELOPING BIAS-DC ENABLE signal
HVEL	INTERNAL STATIC ELIMINATOR CHARGE ON/OFF CONTROL signal
HVGRC	C-GRID BIAS LEVEL CONTROL signal
HVGRK	BK-GRID BIAS LEVEL CONTROL signal
HVGRM	M-GRID BIAS LEVEL CONTROL signal
HVGRY	Y-GRID BIAS LEVEL CONTROL signal
HVPPRC	C-PRE-PRIMARY CORONA CHARGE ON/OFF CONTROL signal
HVPPRK	BK-PRE-PRIMARY CORONA CHARGE ON/OFF CONTROL signal
HVPPRM	M-PRE-PRIMARY CORONA CHARGE ON/OFF CONTROL signal
HVPPRY	Y-PRE-PRIMARY CORONA CHARGE ON/OFF CONTROL signal
HVPRC	C-PRIMARY CORONA CHARGE ON/OFF CONTROL signal

HVPRF	PRE-FIXING CORONA CHARGE ON/OFF CONTROL signal
HVPRK	BK-PRIMARY CORONA CHARGE ON/OFF CONTROL signal
HVPRM	M-PRIMARY CORONA CHARGE ON/OFF CONTROL signal
HVPRY	Y-PRIMARY CORONA CHARGE ON/OFF CONTROL signal
HVSPAC	SEPARATION CORONA-AC CHARGE ON/OFF CONTROL signal
HVSPDC	SEPARATION CORONA-DC CHARGE ON/OFF CONTROL signal
HVSRD	ANTI-TONER SPLASHING BIAS command
HVTR-C	C-TRANSFER CHARGE ON/OFF CONTROL signal
HVTR-K	BK-TRANSFER CHARGE ON/OFF CONTROL signal
HVTR-M	M-TRANSFER CHARGE ON/OFF CONTROL signal
HVTR-Y	Y-TRANSFER CHARGE ON/OFF CONTROL signal
ITOP*	IMAGE LEADING EDGE signal
KDRHD	BK-DRUM HEATER ON command
KEYSW*	CONTROL KEY SWITCH signal
KTEPL*	BK-TONER LEVEL SENSOR SIGNAL (LOWER)
KTEPU*	BK-TONER LEVEL SENSOR SIGNAL (UPPER)
LA1ON	Y-PRE-CONDITIONING LAMP command
LA2ON	M-PRE-CONDITIONING LAMP command
LA3ON	C-PRE-CONDITIONING LAMP command
LA4ON	BK-PRE-CONDITIONING LAMP command
LAERR	SCANNING LAMP ERROR signal
LAON	SCANNING LAMP ON signal
LFLM	PAPER DECK LIFTER LOWER LIMIT signal
LHON	LOWER FIXING HEATER ON command
LINT	SCANNING LAMP INTENSITY signal
LTP	PAPER DECK LIFTER UPPER LIMIT command
M1CCW	MULTIFEEDER LIFTER DOWN command
M1CW	MULTIFEEDER LIFTER UP command
M2-A	Y-MIRROR ANGLE CORRECTION MOTOR command
M2-A*	Y-MIRROR ANGLE CORRECTION MOTOR command
M2-B	Y-MIRROR ANGLE CORRECTION MOTOR command
M2-B*	Y-MIRROR ANGLE CORRECTION MOTOR command
M3-A	Y-MIRROR MAGNIFICATION MOTOR command
M3-A*	Y-MIRROR MAGNIFICATION MOTOR command
M3-B	Y-MIRROR MAGNIFICATION MOTOR command
M3-B*	Y-MIRROR MAGNIFICATION MOTOR command
M5-A	C-MIRROR ANGLE CORRECTION MOTOR command
M5-A*	C-MIRROR ANGLE CORRECTION MOTOR command
M5-B	C-MIRROR ANGLE CORRECTION MOTOR command
M5-B*	C-MIRROR ANGLE CORRECTION MOTOR command
M6-A	C-MIRROR MAGNIFICATION MOTOR command
M6-A*	C-MIRROR MAGNIFICATION MOTOR command
M6-B	C-MIRROR MAGNIFICATION MOTOR command
M6-B*	C-MIRROR MAGNIFICATION MOTOR command
M7-A	BK-MIRROR ANGLE CORRECTION MOTOR command
M7-A*	BK-MIRROR ANGLE CORRECTION MOTOR command
M7-B	BK-MIRROR ANGLE CORRECTION MOTOR command
M7-B*	BK-MIRROR ANGLE CORRECTION MOTOR command
M8-A	BK-MIRROR MAGNIFICATION MOTOR command

M8-A*	BK-MIRROR MAGNIFICATION MOTOR command
M8-B	BK-MIRROR MAGNIFICATION MOTOR command
M8-B*	BK-MIRROR MAGNIFICATION MOTOR command
M9CD	FIXING MOTOR CURRENT DETECTION signal
M9CLK	FIXING MOTOR CLOCK signal
M9D*	FIXING MOTOR command
M9PLL	FIXING MOTOR PLL LOCK command
M9PLS	FIXING MOTOR REFERENCE PULSE signal
M10D*	PICK-UP MOTOR command
M10PLL*	PICK-UP MOTOR PLL LOCK signal
M11-A	PRE-FIXING ASSEMBLY FEEDER MOTOR command
M11-A*	PRE-FIXING ASSEMBLY FEEDER MOTOR command
M11-B	PRE-FIXING ASSEMBLY FEEDER MOTOR command
M11-B*	PRE-FIXING ASSEMBLY FEEDER MOTOR command
M12D*	TRANSFER BELT CLEANING WEB MOTOR command
M13-A	TRANSFER BELT SWING MOTOR command
M13-A*	TRANSFER BELT SWING MOTOR command
M13-B	TRANSFER BELT SWING MOTOR command
M13-B*	TRANSFER BELT SWING MOTOR command
M14D	TRANSFER BELT MOTOR command
M14PLS	TRANSFER BELT MOTOR REFERENCE PULSE signal
M15DIR	POLISHING/OIL REMOVING MOTOR DIRECTION INVERT signal
M15ON	POLISHING/OIL REMOVING MOTOR signal
M15PLL	POLISHING/OIL REMOVING MOTOR PLL LOCK signal
M16ON	CASSETE 1 LIFTER MOTOR command
M17ON	CASSETE 2 LIFTER MOTOR command
M18CON	C-DEVELOPING MOTOR command
M18CPLL*	C-DEVELOPING MOTOR PLL LOCK command
M18KON	BK-DEVELOPING MOTOR command
M18KPLL*	BK-DEVELOPING MOTOR PLL LOCK command
M18MON	M-DEVELOPING MOTOR command
M18MPLL*	M-DEVELOPING MOTOR PLL LOCK command
M18YON	Y-DEVELOPING MOTOR command
M18YPLL*	Y-DEVELOPING MOTOR PLL LOCK command
M19ON	DUPLEXING UNIT FEEDER MOTOR command
M19PLL*	DUPLEXING UNIT FEEDER MOTOR PLL LOCK command
M20ON	WASTE TONER FEED MOTOR command
M20PLL*	WASTE TONER FEED MOTOR PLL LOCK signal
M21ON	DRUM MOTOR command
M21PLL*	DRUM MOTOR PLL LOCK signal
M22FW	SEP./PRE-FIXING CORONA WIRE CLEANING MOTOR FORWARD command
M22RV	SEP./PRE-FIXING CORONA WIRE CLEANING MOTOR REVERSE command
M-23A	DUPLEXING UNIT STACK GUIDE MOTOR command
M-23A*	DUPLEXING UNIT STACK GUIDE MOTOR command
M-23B	DUPLEXING UNIT STACK GUIDE MOTOR command
M-23B*	DUPLEXING UNIT STACK GUIDE MOTOR command
M24CFW	C-PRIMARY CORONA WIRE CLEANING MOTOR FORWORD command
M24CRV	C-PRIMARY CORONA WIRE CLEANING MOTOR REVERSE command
M24KFW	BK-PRIMARY CORONA WIRE CLEANING MOTOR FORWORD command

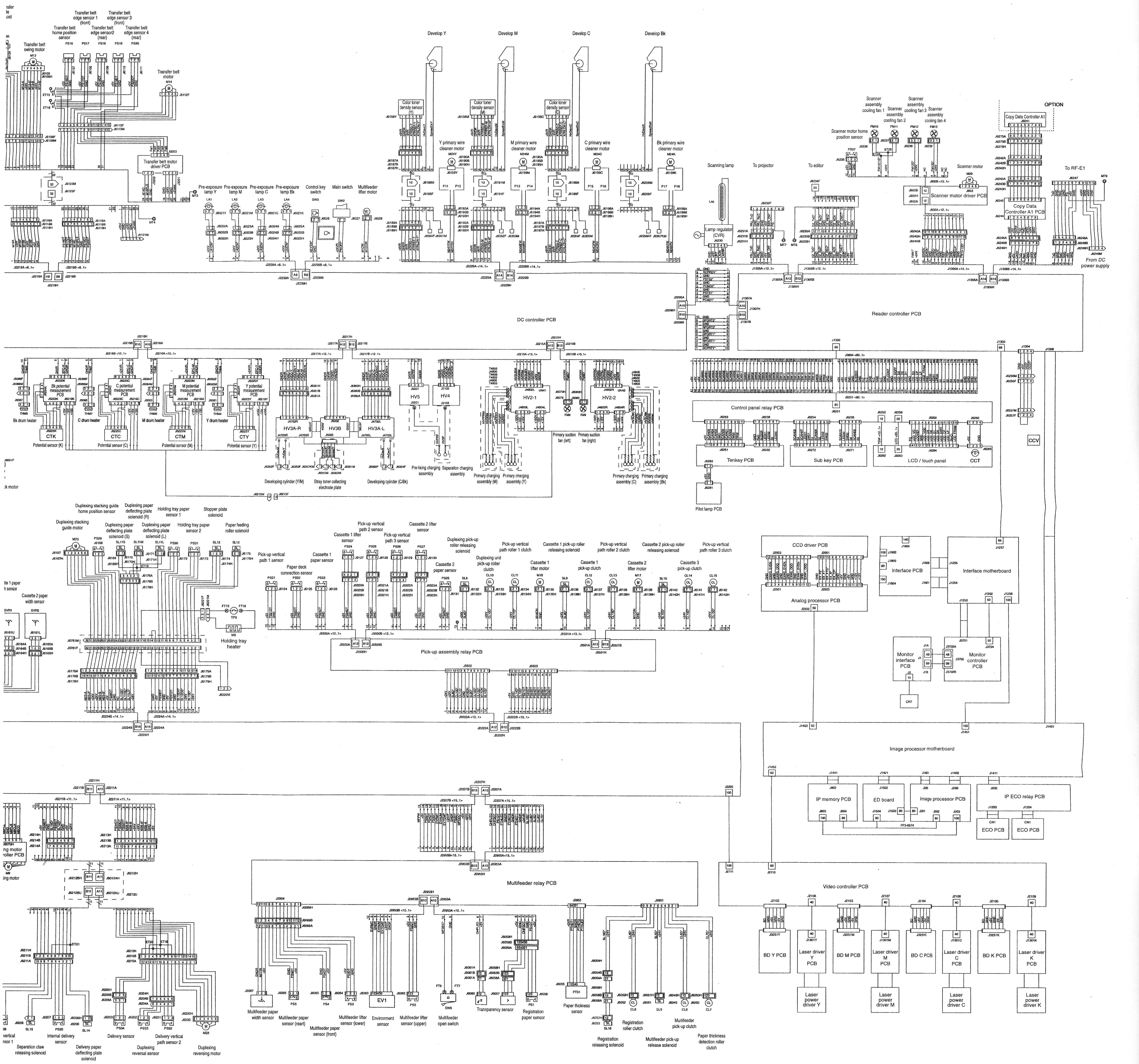
M24KRV	BK-PRIMARY CORONA WIRE CLEANING MOTOR REVERSE command
M24MFW	M-PRIMARY CORONA WIRE CLEANING MOTOR FORWORD command
M24MRV	M-PRIMARY CORONA WIRE CLEANING MOTOR REVERSE command
M24YFW	Y-PRIMARY CORONA WIRE CLEANING MOTOR FORWORD command
M24YRV	Y-PRIMARY CORONA WIRE CLEANING MOTOR REVERSE command
M28-A	DUPLEXING UNIT REVERSE MOTOR command
M28-A*	DUPLEXING UNIT REVERSE MOTOR command
M28-B	DUPLEXING UNIT REVERSE MOTOR command
M28-B*	DUPLEXING UNIT REVERSE MOTOR command
M29CLK*	DOCUMENT SCANNING MOTOR CLOCK signal
M30D	LOWER FIXING ROLLER CLEANING WEB MOTOR command
MDRHD	M-DRUM HEATER ON command
MFDDC*	MULTIFEEDER ON command
MFPW	MULTIFEEDER PAPER WIDTH VR signal
MTEPL*	M-TONER LEVEL SENSOR signal (LOWER)
MTEPU*	M-TONER LEVEL SENSOR signal (UPPER)
OEP*	FIXING OIL LEVEL SENSOR signal
OHPLED	OHP SESOR LED command
OHPSDT	OHP DETECT signal
PRSD*	PAPER DECK PICK-UP ROLLER RELEASE SOLENOID command
PS1DT	REGISTRATION PAPER SENSOR signal
PS2DT	MULTIFEEDER LIFTER SENSOR signal (UPPER)
PS3DT	MULTIFEEDER LIFTER SENSOR signal (LOWER)
PS4DT	MULTIFEEDER PAPER SENSOR signal (FRONT)
PS5DT	MULTIFEEDER PAPER SENSOR signal (REAR)
PS8DT	PRE-HOLDING TRAY FEEDER SENSOR 1 signal
PS9DT	PRE-HOLDING TRAY FEEDER SENSOR 2 signal
PS10DT	TRANSFER BELT CLEANING WEB ROTATION SENSOR signal
PS11DT	TRANSFER BELT CLEANING WEB LEVEL SENSOR signal
PS12DT	TRANSFER BELT LIFTER SENSOR 1 signal
PS13DT	TRANSFER BELT LIFTER SENSOR 2 signal
PS14DT	POST-REGISTRATION PAPER SENSOR signal
PS15DT	SEPARATION SESOR signal
PS16DT	TRANSFER BELT HOME POSITION SENSOR signal
PS17DT	TRANSFER BELT EDGE SENSOR 1 signal (FRONT)
PS18DT	TRANSFER BELT EDGE SENSOR 1 signal (REAR)
PS19DT	TRANSFER BELT EDGE SENSOR 2 signal (FRONT)
PS20DT	TRANSFER BELT EDGE SENSOR 1 signal (REAR)
PS21DT	PICK-UP VERTICAL PATH 1 SENSOR 2 single (REAR)
PS22DT	PAPER DECK CONNECT SENSOR signal
PS23DT	CASSETTE 1 PAPER SENSOR signal
PS24DT	CASSETTE 1 LIFTER SENSOR signal
PS25DT	PICK-UP VERTICAL PATH 2 SENSOR signal
PS26DT	PICK-UP VERTICAL PATH 3 SENSOR signal
PS27DT	CASSETTE 2 LIFTER SENSOR signal
PS28DT	CASSETTE 2 PAPER SENSOR signal
PS29DT	DUPLEXING UNIT STACK GUIDE HOME POSITION SENSOR signal
PS30DT	HOLDING TRAY PAPER SENSOR 1 signal
PS31DT	HOLDING TRAY PAPER SENSOR 2 signal

PS32DT	DELIVERY VERTICAL PATH 2 SENSOR signal
PS33DT	DUPLEXING UNIT REVERSAL SENSOR signal
PS34DT	DELIVERY SENSOR signal
PS35DT	INTERNAL DELIVERY SENSOR signal
PS36DT	UPPER FIXING ROLLER CLEANING WEB SENSOR signal
PS38DT	DELIVERY VERTICAL PATH 1 SENSOR signal
PTHDT1	PAPER THICKNESS DETECT 1 signal
PTHDT2	PAPER THICKNESS DETECT 2 signal
PTHLED	PAPER THICKNESS SENSOR command
SALLON-C	C-SALT SENSOR LED ON command
SALLON-K	BK-SALT SENSOR LED ON command
SALLON-M	M-SALT SENSOR LED ON command
SALLON-Y	Y-SALT SENSOR LED ON command
SALREF-C	C-SALT SENSOR TONER REFERENCE signal
SALREF-K	BK-SALT SENSOR TONER REFERENCE signal
SALREF-M	M-SALT SENSOR TONER REFERENCE signal
SALREF-Y	Y-SALT SENSOR TONER REFERENCE signal
SALSG-C	C-SALT SENSOR TONER DENSITY signal
SALSG-K	BK-SALT SENSOR TONER DENSITY signal
SALSG-M	M-SALT SENSOR TONER DENSITY signal
SALSG-Y	Y-SALT SENSOR TONER DENSITY signal
SCHP	SCANNER HOME POSITION signal
SDATA*	SCANNER DATA signal
SL2D*	FIXING OIL PUMP SOLENOID command
SL3D*	UPPER FIXING ROLLER CLEANING WEB SOLENOID command
SL4D*	UPPER FIXING ROLLER CLEANING WEB RELEASE SOLENOID command
SL5D*	MULTIFEEDER PICK-UP ROLLER RELEASE SOLENOID command
SL6DR*	TRANSFER BELT CLEANING BLADE RELEASE command
SL6DS*	TRANSFER BELT CLEANING BLADE SET command
SL7CDR*	C-TRANSFER BLADE RELEASE command
SL7CDS*	C-TRANSFER BLADE SET command
SL7KDR*	BK-TRANSFER BLADE RELEASE command
SL7KDS*	BK-TRANSFER BLADE SET command
SL7MDR*	M-TRANSFER BLADE RELEASE command
SL7MDS*	M-TRANSFER BLADE SET command
SL7YDR*	Y-TRANSFER BLADE RELEASE command
SL7YDS*	Y-TRANSFER BLADE SET command
SL8D*	DUPLEXING UNIT PICK-UP ROLLER RELEASE SOLENOID command
SL9D*	CASSETTE 1 PICK-UP ROLLER RELEASE SOLENOID command
SL10D*	CASSETTE 2 PICK-UP ROLLER RELEASE SOLENOID command
SL11LD*	DUPLEXING UNIT L-PAPER DEFLECTOR SOLENOID command
SL11RD*	DUPLEXING UNIT M-PAPER DEFLECTOR SOLENOID command
SL11SD*	DUPLEXING UNIT S-PAPER DEFLECTOR SOLENOID command
SL12DR*	DUPLEXING UNIT STOP PLATE RELEASE command
SL12DS*	DUPLEXING UNIT STOP PLATE SET command
SL13D*	DUPLEXING UNIT PAPER FEED ROLLER SOLENOID command
SL14D*	DELIVERY PAPER DEFLECTOR SOLENOID command
SL15D*	SEPARATION CLAW RELEASE SOLENOID command
SL16D*	REGISTRATION ROLLER RELEASE SOLENOID command

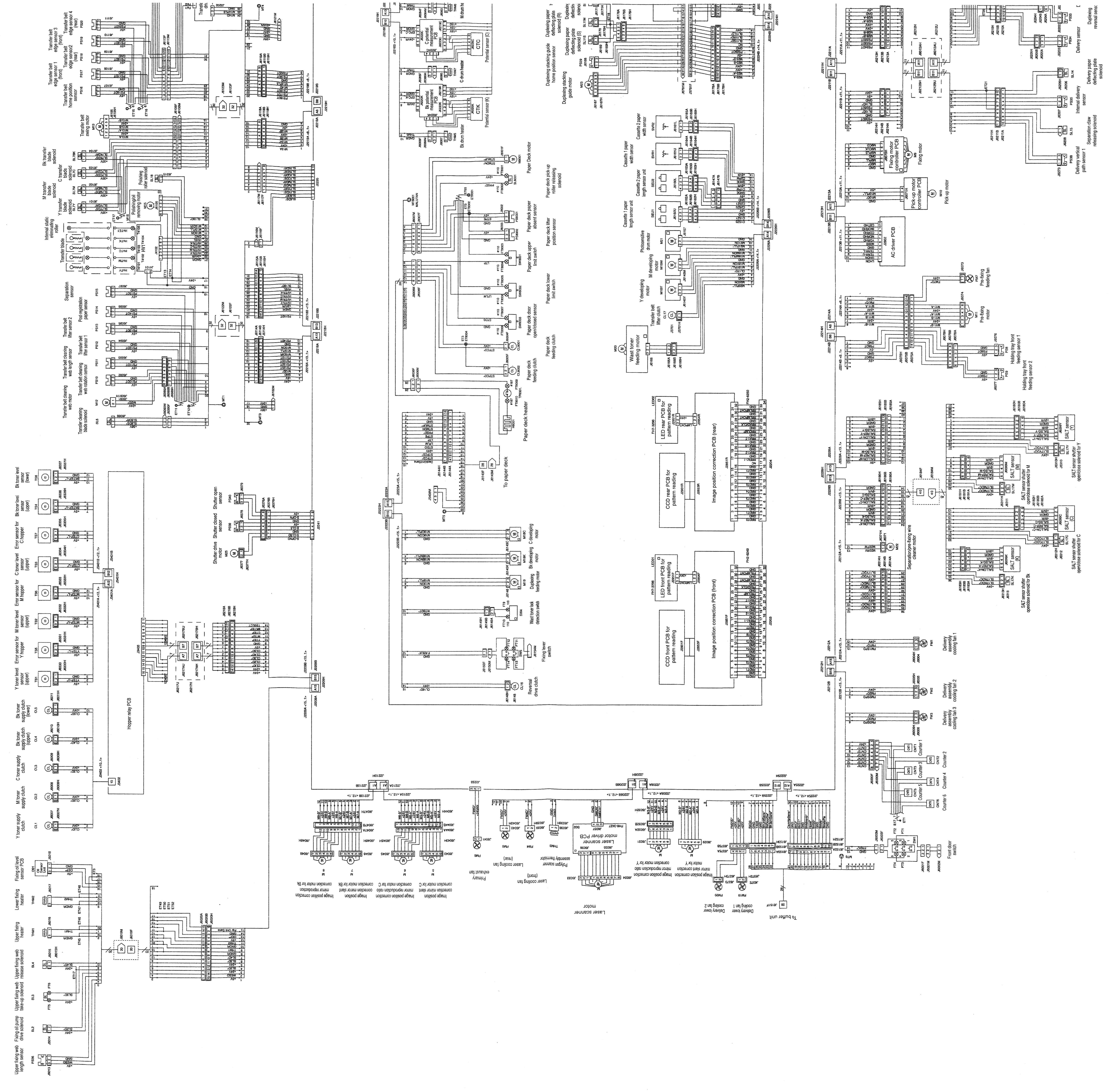
SL17CDC*	C-SALT SENSOR SHUTTER CLOSE command
SL17CDO*	C-SALT SENSOR SHUTTER OPEN command
SL17KDC*	BK-SALT SENSOR SHUTTER CLOSE command
SL17KDO*	BK-SALT SENSOR SHUTTER OPEN command
SL17MDC*	M-SALT SENSOR SHUTTER CLOSE command
SL17MDO*	M-SALT SENSOR SHUTTER OPEN command
SL17YDC*	Y-SALT SENSOR SHUTTER CLOSE command
SL17YDO*	Y-SALT SENSOR SHUTTER OPEN command
SL18D*	POLISHING ROLLER SOLENOID command
SMON*	LASER SCANNER MOTOR command
SMRDY*	LASER SCANNER READY signal
STDO	PAPER DECK COVER SWITCH signal
STFCD*	PAPER DECK FEED ROLLER CLUTCH command
STMDN	PAPER DECK MOTOR MOVE DOWN command
STMUP*	PAPER DECK MOTOR MOVE UP command
STPCD*	PAPER DECK PICK-UP ROLLER CLUTCH command
STPE	PAPER DECK PAPER SENSOR signal
TERR-L*	LOWER FIXING HEATER DRIVE TRIAC SHORT CIRCUIT DETECTION signal
TERR-U*	UPPER FIXING HEATER DRIVE TRIAC SHORT CIRCUIT DETECTION signal
THM1	UPPER FIXING ROLLER TEMPERATURE signal
THM2	LOWER FIXING ROLLER TEMPERATURE signal
THM3	LASER SCANNER TEMPERATURE signal
THM4	Y-DRUM HEATER TEMPERATURE signal
THM5	BK-DRUM HEATER TEMPERATURE signal
THM6	M-DRUM HEATER TEMPERATURE signal
THM7	C-DRUM HEATER TEMPERATURE signal
TSSLCT	TONER SENSOR SELECT signal
UHON	UPPER FIXING HEATER ON command
WTBDT*	WASTE TONER BLOCKING signal
YDRHD	Y-DRUM HEATER ON command
YTEPL*	Y-TONER LEVEL SENSOR signal (LOWER)
YTEPL*	Y-TONER LEVEL SENSOR signal (UPPER)

C. GENERAL CIRCUIT DIAGRAM

General Circuit Diagram (1/3)

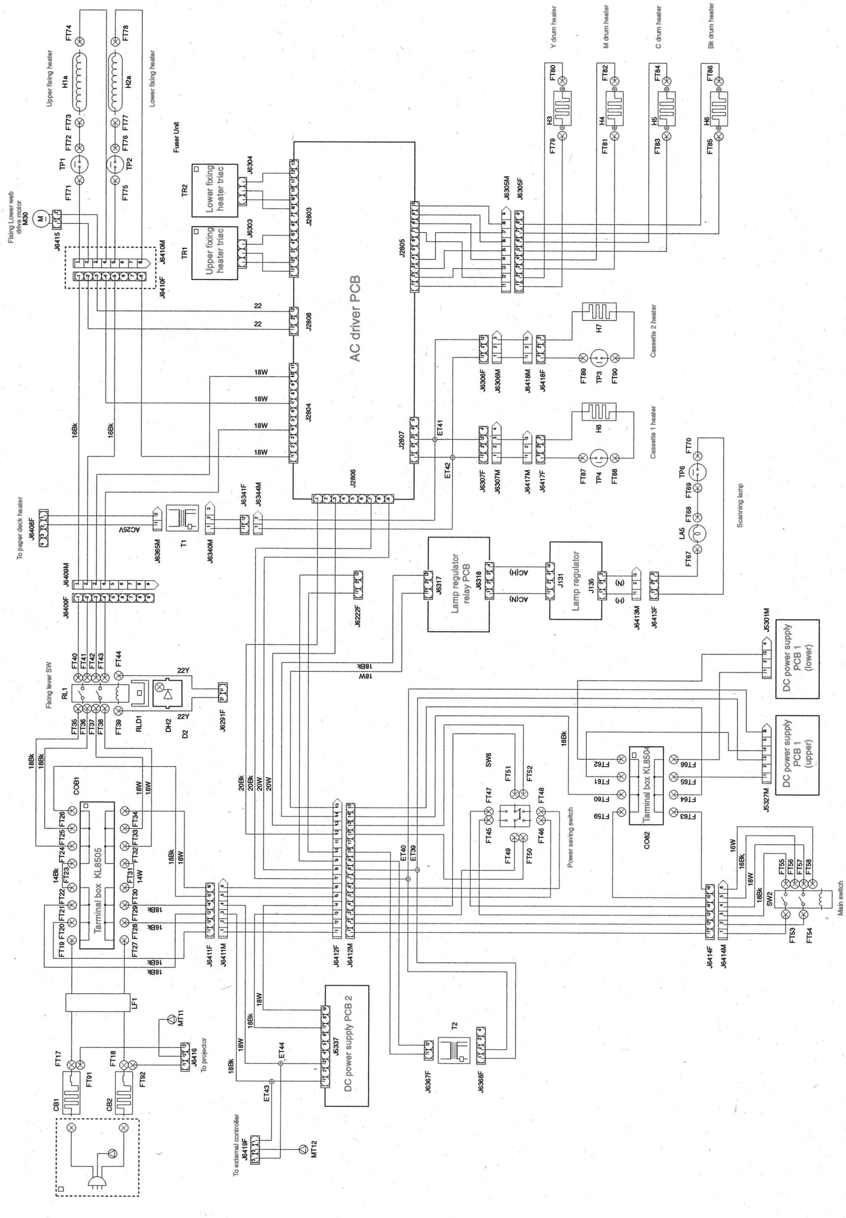


Transfer belt edge sensor 1 (front)
Transfer belt edge sensor 3 (front)
Transfer belt home position sensor
Transfer belt edge sensor2 (rear)
Transfer belt edge sensor 4 (rear)
Transfer belt swing motor
Transfer belt motor
Transfer belt motor driver PCB
Develop Y
Develop M
Develop C
Develop Bk
Color toner density sensor
Y primary wire cleaner motor
M primary wire cleaner motor
C primary wire cleaner motor
Bk primary wire cleaner motor
Pre-exposure lamp Y
Pre-exposure lamp M
Pre-exposure lamp C
Pre-exposure lamp Bk
Control key switch
Main switch
Multifeeder lifter motor
Scanning lamp
To projector
To editor
Scanner motor home position sensor
Scanner assembly cooling fan 1
Scanner assembly cooling fan 2
Scanner assembly cooling fan 3
Scanner assembly cooling fan 4
Scanner motor
Scanner motor driver PCB
OPTION
Copy Data Controller A1
Copy Data Controller A1 PCB
To RF-E1
From DC power supply
Lamp regulator (CVR)
DC controller PCB
Reader controller PCB
Bk potential measurement PCB
C potential measurement PCB
M potential measurement PCB
Y potential measurement PCB
CTK
CTC
CTM
CTY
Bk drum heater
C drum heater
M drum heater
Y drum heater
Potential sensor (K)
Potential sensor (C)
Potential sensor (M)
Potential sensor (Y)
HV3A-R
HV3B
HV3A-L
HV5
HV4
HV2-1
HV2-2
Developing cylinder (Y/M)
Stray toner collecting electrode plate
Developing cylinder (C/Bk)
Pre-fixing charging assembly
Separation charging assembly
Primary charging assembly (M)
Primary charging assembly (Y)
Primary suction fan (left)
Primary suction fan (right)
Primary charging assembly (C)
Primary charging assembly (Bk)
Control panel relay PCB
Tenkey PCB
Sub key PCB
LCD / touch panel
CCT
CCV
Pilot lamp PCB
Duplexing stacking guide home position sensor
Duplexing paper deflecting plate solenoid (R)
Holding tray paper sensor 1
Stopper plate solenoid
Duplexing stacking guide motor
Duplexing paper deflecting plate solenoid (S)
Duplexing paper deflecting plate solenoid (L)
Holding tray paper sensor 2
Paper feeding roller solenoid
Cassette 2 paper width sensor
Holding tray heater
Pick-up vertical path 1 sensor
Paper deck connection sensor
Cassette 1 paper sensor
Cassette 1 lifter sensor
Pick-up vertical path 2 sensor
Pick-up vertical path 3 sensor
Cassette 2 lifter sensor
Cassette 2 paper sensor
Duplexing pick-up roller releasing solenoid
Duplexing unit pick-up roller clutch
Pick-up vertical path roller 1 clutch
Cassette 1 lifter motor
Cassette 1 pick-up roller releasing solenoid
Cassette 1 pick-up clutch
Pick-up vertical path roller 2 clutch
Cassette 2 lifter motor
Cassette 2 pick-up roller releasing solenoid
Cassette 3 pick-up clutch
Pick-up vertical path roller 3 clutch
Pick-up assembly relay PCB
CCD driver PCB
Analog processor PCB
Interface PCB
Interface motherboard
Monitor interface PCB
Monitor controller PCB
CR7
Image processor motherboard
IP memory PCB
ED board
Image processor PCB
IP ECO relay PCB
ECO PCB
ECO PCB
Multifeeder relay PCB
Video controller PCB
BD Y PCB
Laser driver Y PCB
Laser power driver Y
BD M PCB
Laser driver M PCB
Laser power driver M
BD C PCB
Laser driver C PCB
Laser power driver C
BD K PCB
Laser driver K PCB
Laser power driver K
Multifeeder paper width sensor
Multifeeder paper sensor (rear)
Multifeeder paper sensor (front)
Multifeeder lifter sensor (lower)
Environment sensor
EV1
Multifeeder lifter sensor (upper)
Multifeeder open switch
Transparency sensor
Registration paper sensor
Paper thickness sensor
Registration roller clutch
Registration releasing solenoid
Multifeeder pick-up release solenoid
Multifeeder pick-up clutch
Paper thickness detection roller clutch
Separation claw releasing solenoid
Internal delivery sensor
Delivery paper deflecting plate solenoid
Delivery sensor
Delivery vertical path sensor 2
Duplexing reversal sensor
Duplexing reversing motor

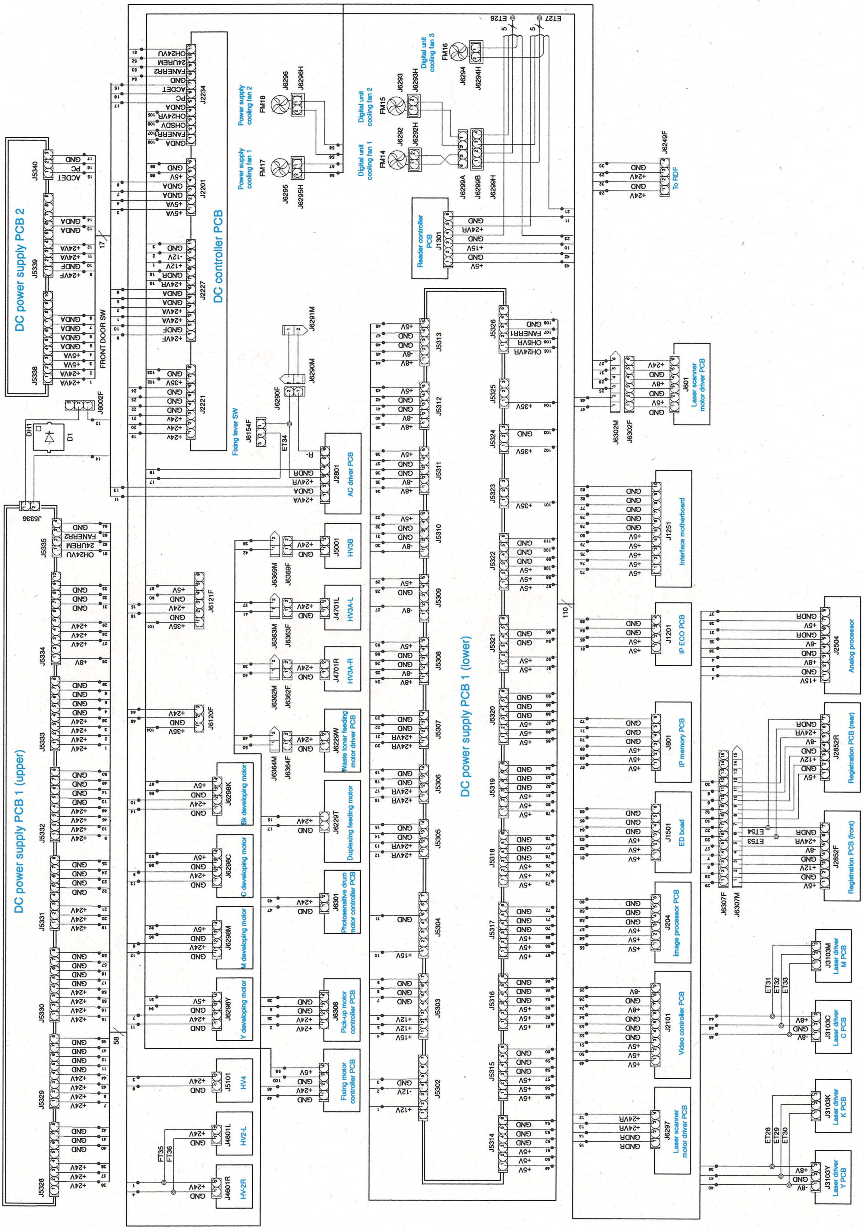

Hopper relay PCB
Laser scanner motor
Laser scanner motor driver PCB
To buffer unit
Front door switch
AC driver PCB
Pick-up motor controller PCB
Pick-up motor
Fixing motor controller PCB
Fixing motor
Image position correction PCB (rear)
Image position correction PCB (front)
CCD rear PCB for pattern reading
CCD front PCB for pattern reading
LED rear PCB for pattern reading
LED front PCB for pattern reading
To paper deck
Paper deck heater
Potential sensor (C)
Potential sensor (K)
Waste toner feeding motor
Transfer blade
Counter 1
Counter 2
Counter 3
Counter 4
Counter 5
Counter 6

General Circuit Diagram (2/3)

For routes not indicated, power supply voltage as required by the country of installation is supplied.

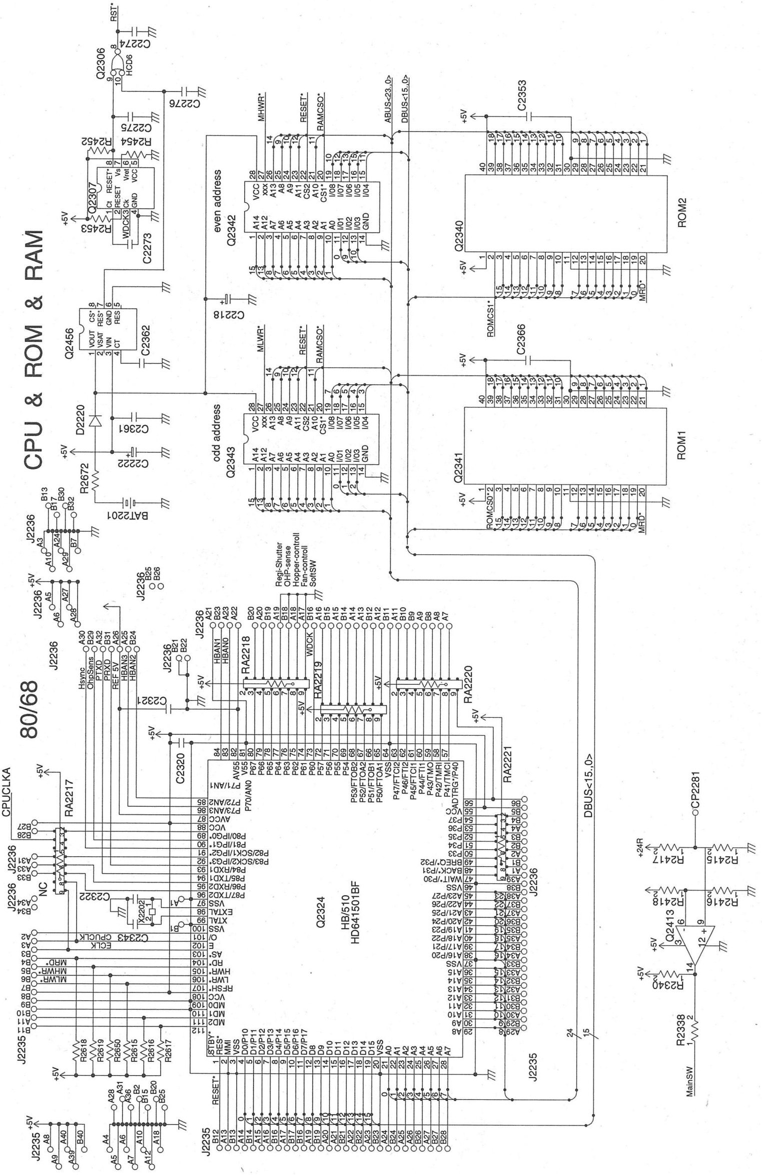

Upper fixing heater
H1a
FT71
FT72
FT73
FT74
TP1
Lower fixing heater
H2a
FT75
FT76
FT77
FT78
TP2
Fuser Unit
Fixing Lower web drive motor
M30
J6415
J6410M
J6410F
TR1
Upper fixing heater triac
J6303
TR2
Lower fixing heater triac
J6304
J2803
J2805
J2808
J2804
J2807
J2806
AC driver PCB
22
18W
18Bk
Y drum heater
M drum heater
C drum heater
Bk drum heater
H3
H4
H5
H6
FT79
FT80
FT81
FT82
FT83
FT84
FT85
FT86
J6305M
J6305F
J6306F
J6306M
J6418M
J6418F
H7
FT89
TP3
FT90
Cassette 2 heater
J6307F
J6307M
J6417M
J6417F
H8
FT87
TP4
FT88
Cassette 1 heater
ET41
ET42
TP6
FT70
FT69
FT68
LA5
FT67
Scanning lamp
To paper deck heater
J6408F
AC25V
J6365M
T1
J6340M
J6341F
J6344M
J6409M
J6409F
Lamp regulator relay PCB
J6317
J6318
AC(H)
AC(N)
Lamp regulator
J131
J135
(N)
(H)
J6413M
J6413F
J6222F
DC power supply PCB 1 (lower)
J5301M
DC power supply PCB 1 (upper)
J5327M
Fixing lever SW
RL1
FT35
FT36
FT37
FT38
FT39
FT40
FT41
FT42
FT43
FT44
RLD1
DH2
D2
22Y
J6291F
18Bk
18W
COB1
Tarminal box KL8505
FT19
FT20
FT21
FT22
FT23
FT24
FT25
FT26
FT27
FT28
FT29
FT30
FT31
FT32
FT33
FT34
14Bk
14W
16Bk
J6411F
J6411M
20Bk
20W
J6412F
J6412M
ET40
ET39
SW8
FT45
FT46
FT47
FT48
FT49
FT50
FT51
FT52
Power saving switch
CO82
Tarminal box KL8504
FT59
FT60
FT61
FT62
FT63
FT64
FT65
FT66
16W
J6414F
J6414M
SW2
FT53
FT54
FT55
FT56
FT57
FT58
Main switch
LF1
MT11
J6416
To projector
FT17
FT18
FT91
FT92
CB1
CB2
DC power supply PCB 2
J5337
ET44
ET43
To external controller
J6419F
MT12
T2
J6367F
J6368F

General Circuit Diagram (3/3)

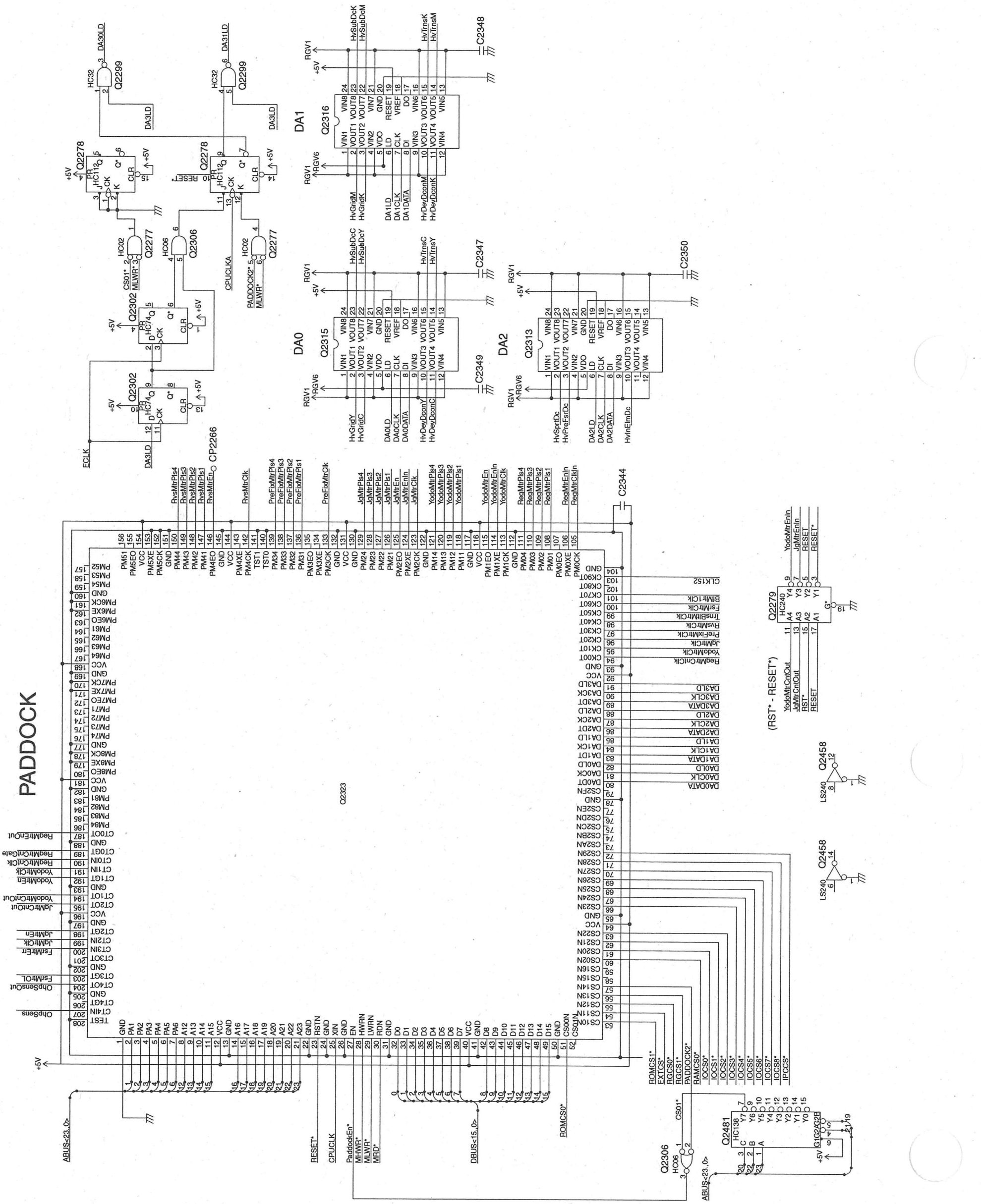

DC power supply PCB 2
J5338
J5339
J5340
FRONT DOOR SW
J6002F
DH1
D1
DC power supply PCB 1 (upper)
J5328
J5329
J5330
J5331
J5332
J5333
J5334
J5335
J5336
DC controller PCB
J2221
J2227
J2201
J2234
AC driver PCB
J2801
Fixing lever SW
J6154F
ET34
J6290F
J6290M
J6291M
Power supply cooling fan 1
FM17
J6295
J6295H
Power supply cooling fan 2
FM18
J6296
J6296H
Digital unit cooling fan 1
FM14
J6292
J6292H
Digital unit cooling fan 2
FM15
J6293
J6293H
Digital unit cooling fan 3
FM16
J6294
J6294H
J6299A
J6299B
J6299H
ET126
ET127
Reader controller PCB
J1301
To RDF
J6249F
Laser scanner motor driver PCB
J601
J6302M
J6302F
HV3B
J5001
J6369M
J6369F
HV3A-L
J4701L
J6363M
J6363F
HV3A-R
J4701R
J6362M
J6362F
Waste toner feeding motor driver PCB
J6229W
J6364M
J6364F
Duplexing feeding motor
J6229T
Photosensitive drum motor controller PCB
J6301
Pick-up motor controller PCB
J6308
Fixing motor controller PCB
J6121F
J6120F
Bk developing motor
J6298K
C developing motor
J6298C
M developing motor
J6298M
Y developing motor
J6298Y
HV4
J5101
HV2-L
J4601L
HV2-R
J4601R
FT35
FT36
DC power supply PCB 1 (lower)
J5302
J5303
J5304
J5305
J5306
J5307
J5308
J5309
J5310
J5311
J5312
J5313
J5314
J5315
J5316
J5317
J5318
J5319
J5320
J5321
J5322
J5323
J5324
J5325
J5326
Interface motherboard
J1251
IP ECO PCB
J1201
IP memory PCB
J801
ED board
J1501
Image processor PCB
J204
Video controller PCB
J2101
Laser scanner motor driver PCB
J6297
Analog processor
J2504
Registration PCB (rear)
J2852R
Registration PCB (front)
J2852F
J6307F
J6307M
ET53
ET54
Laser driver M PCB
J3103M
Laser driver C PCB
J3103C
Laser driver K PCB
J3103K
Laser driver Y PCB
J3103Y
ET28
ET29
ET30
ET31
ET32
ET33

D. DC CONTROLLER CIRCUIT DIAGRAM

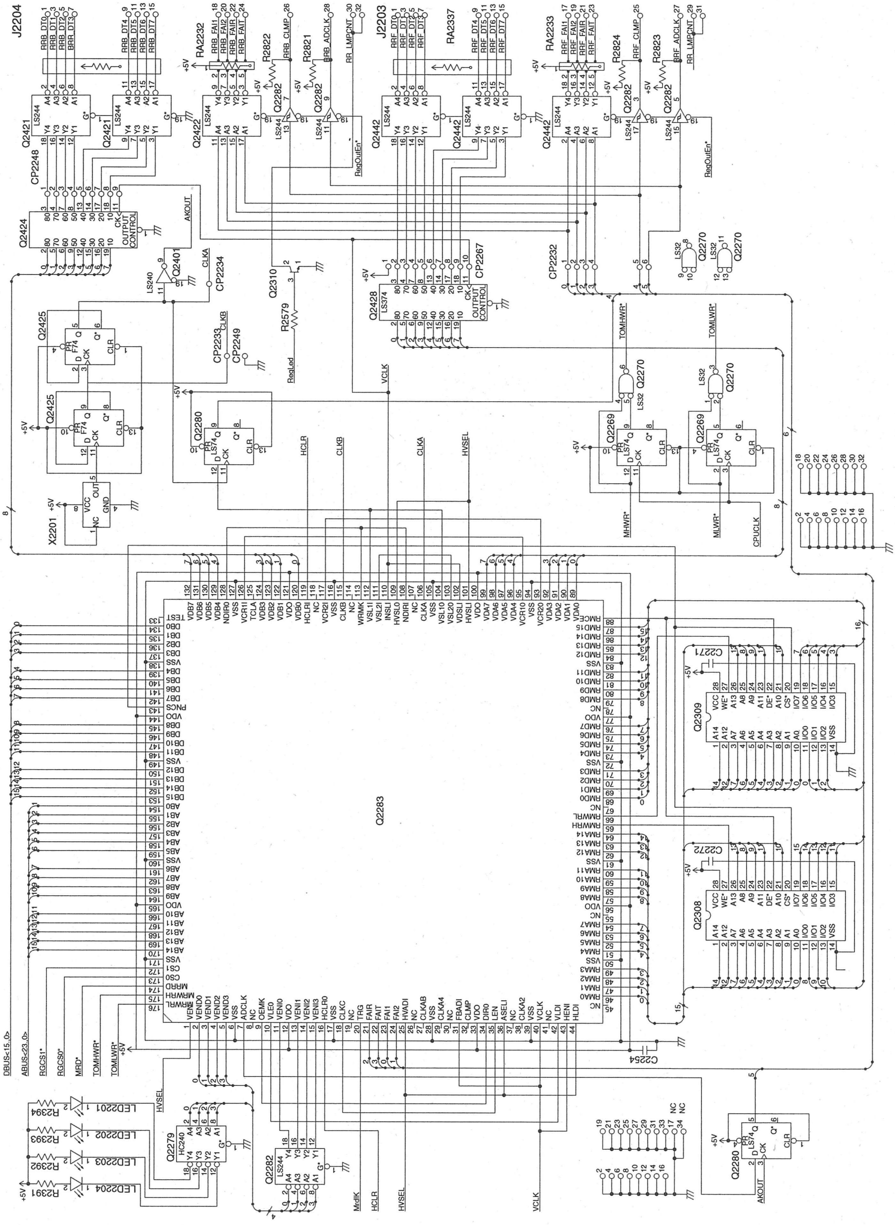
DC Controller Circuit Diagram (1/36)


CPU & ROM & RAM
80/68
Q2324
HB/510
HD641501BF
Q2342
even address
Q2343
odd address
Q2340
ROM2
Q2341
ROM1
Q2456
Q2307
Q2306
HCD6
D2220
BAT2201
R2672
C2222
C2361
C2362
C2218
C2273
C2274
C2275
C2276
R2452
R2453
R2454
C2353
C2366
ROMCS0*
ROMCS1*
MRD*
MHWR*
MLWR*
RESET*
RAMCSO*
RST*
ABUS<23..0>
DBUS<15..0>
RA2217
RA2218
RA2219
RA2220
RA2221
C2320
C2321
C2322
C2343
X2202
CPUCLKA
CPUCLK
ECLK
NC
J2235
J2236
Regi-Shutter
OHP-sense
Hopper-controll
Fan-controll
SoftSW
Hsync
OhpSens
PTXD
PRXD
REF 5V
HBAN3
HBAN2
HBAN1
HBAN0
WDCK
R2618
R2619
R2650
R2615
R2616
R2617
Q2413
R2338
R2340
R2416
R2418
R2415
R2417
CP2281
MainSW
+24R
+5V

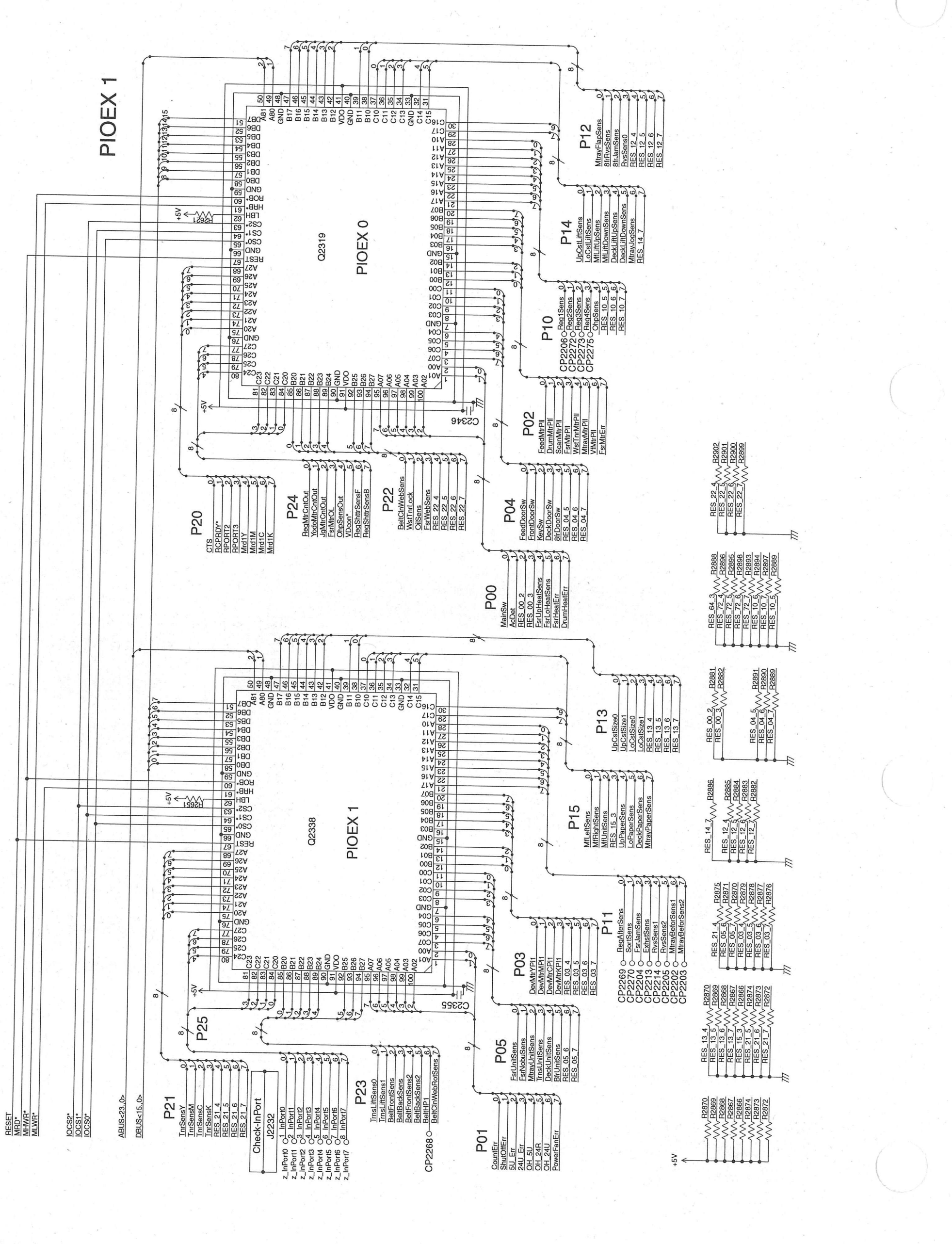
DC Controller Circuit Diagram (2/36)


PADDOCK
Q2323
DA0
Q2315
DA1
Q2316
DA2
Q2313
Q2278
HC112
Q2299
HC32
Q2277
HC02
Q2306
HC06
Q2302
HC74
CP2266
C2344
C2347
C2348
C2349
C2350
Q2279
HC240
(RST* - RESET*)
Q2458
LS240
Q2481
HC138
ABUS<23..0>
DBUS<15..0>
ECLK
DA30LD
DA31LD
RGV1
RGV6
+5V

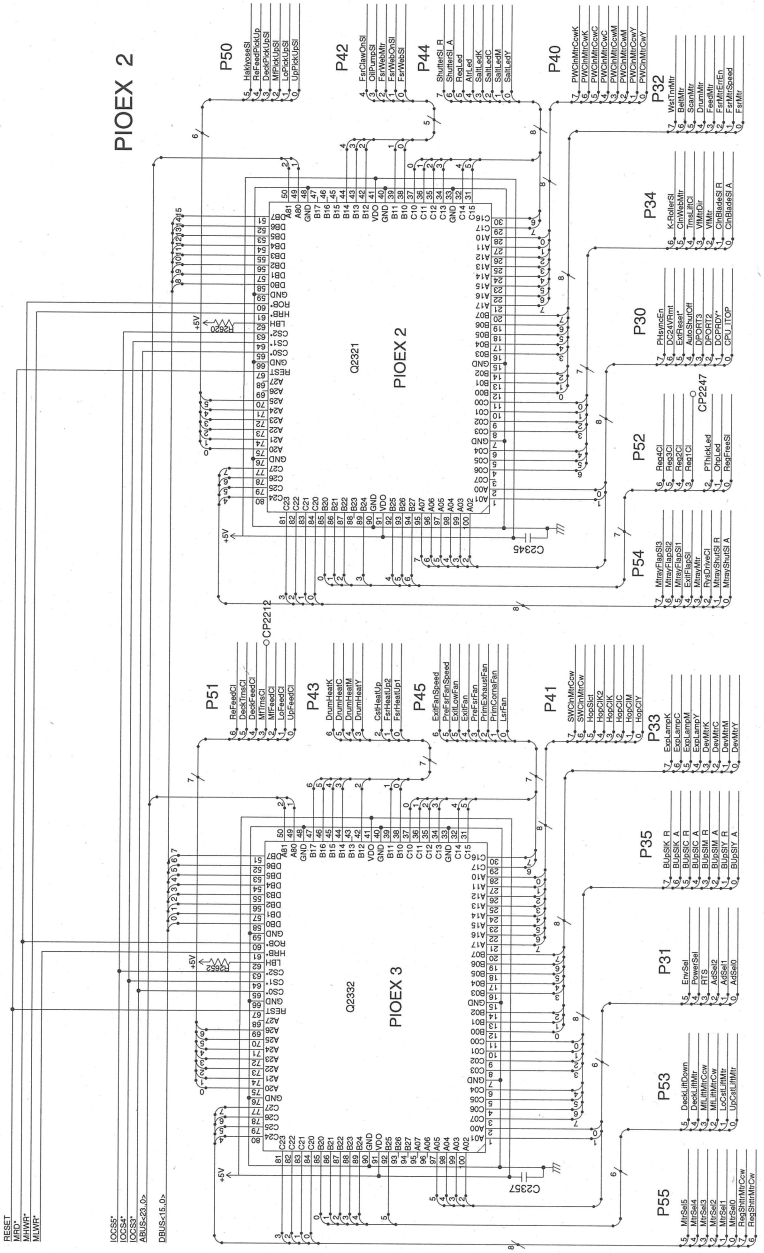
DC Controller Circuit Diagram (3/36)


J2204
J2203
RA2232
RA2233
RA2337
R2821
R2822
R2823
R2824
Q2421
Q2422
Q2442
Q2424
Q2428
CP2248
CP2267
CP2232
CP2234
CP2233
CP2249
Q2401
Q2310
R2579
Q2270
Q2425
Q2280
Q2269
X2201
Q2283
Q2309
Q2308
C2271
C2272
C2254
Q2279
Q2282
LED2201
LED2202
LED2203
LED2204
R2391
R2392
R2393
R2394
DBUS<15..0>
ABUS<23..0>
RGCS1*
RGCS0*
MRD*
TOMHWR*
TOMLWR*
HCLR
CLKB
CLKA
HVSEL
VCLK
MHWR*
MLWR*
CPUCLK
AKOUT
RegOutEn*
RegLed
+5V

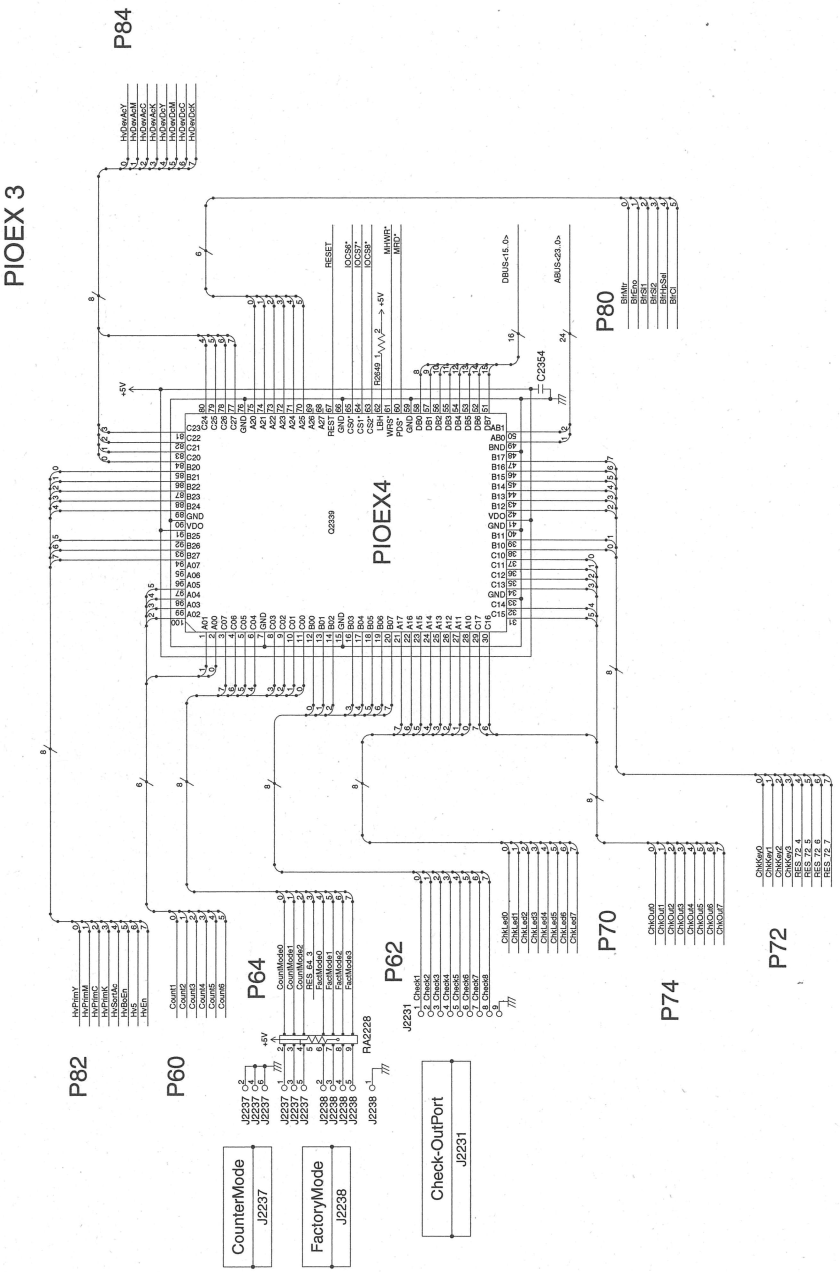
DC Controller Circuit Diagram (4/36)


PIOEX 1
PIOEX 0
Q2319
PIOEX 1
Q2338
C2346
C2355
P12
MtrayFlapSens
8frRvsSens
8frJamSens
RvsSens0
RES_12_4
RES_12_5
RES_12_6
RES_12_7
P14
UpCstLiftSens
LoCstLiftSens
MfLiftUpSens
MfLiftDownSens
DeckLiftUpSens
DeckLiftDownSens
MtrayJogSens
RES_14_7
P10
Reg1Sens
Reg2Sens
Reg3Sens
Reg4Sens
OhpSens
RES_10_5
RES_10_6
RES_10_7
CP2206
CP2272
CP2273
CP2275
P02
FeedMtrPll
DrumMtrPll
ScanMtrPll
FsrMtrPll
WstTnrMtrPll
MtrayMtrPll
VlMtrPll
FsrMtrErr
P04
FeedDoorSw
FrontDoorSw
KeySw
DeckDoorSw
8frDoorSw
RES_04_5
RES_04_6
RES_04_7
P22
BeltClnWebSens
WstTnrLock
OilSens
FsrWebSens
RES_22_4
RES_22_5
RES_22_6
RES_22_7
P24
RegMtrCntOut
YodoMtrCntOut
JgMtrCntOut
FsrMtrOL
OhpSensOut
VDoor*
RegShttrSensF
RegShttrSensB
P20
CTS
RCPRDY*
RPORT2
RPORT3
Mtd1Y
Mtd1M
Mtd1C
Mtd1K
P00
MainSw
AcDet
RES_00_2
RES_00_3
FsrUpHeatSens
FsrLoHeatSens
FsrHeatErr
DrumHeatErr
P13
UpCstSize0
UpCstSize1
LoCstSize0
LoCstSize1
RES_13_4
RES_13_5
RES_13_6
RES_13_7
P15
MfLeftSens
MfRightSens
MfUnitSens
RES_15_3
UpPaperSens
LoPaperSens
DeckPaperSens
MtrayPaperSens
P11
RegAfterSens
SortSens
FsrJamSens
ExhstSens
RvsSens1
RvsSens2
MtrayBeforSens1
MtrayBeforSens2
CP2269
CP2270
CP2204
CP2214
CP2205
CP2202
CP2203
P03
DevMtrYPll
DevMtrMPll
DevMtrCPll
DevMtrKPll
RES_03_4
RES_03_5
RES_03_6
RES_03_7
P05
FsrUnitSens
FsrNobuSens
MtrayUnitSens
TrnsUnitSens
DeckUnitSens
8frUnitSens
RES_05_6
RES_05_7
P01
CountErr
ShutOffErr
5U_Err
24U_Err
OH_5U
OH_24R
OH_24U
PowerFanErr
P25
P21
TnrSensY
TnrSensM
TnrSensC
TnrSensK
RES_21_4
RES_21_5
RES_21_6
RES_21_7
Check-InPort
J2232
z_InPort0
z_InPort1
z_InPort2
z_InPort3
z_InPort4
z_InPort5
z_InPort6
z_InPort7
P23
TrnsLiftSens0
TrnsLiftSens1
BeltFrontSens
BeltBackSens
BeltFrontSens2
BeltBackSens2
BeltHP1
BeltClnWebRotSens
CP2268
RESET
MRD*
MHWR*
MLWR*
IOCS2*
IOCS1*
IOCS0*
ABUS<23..0>
DBUS<15..0>
+5V
R2861
R2902
R2901
R2900
R2899
R2888
R2896
R2895
R2898
R2893
R2894
R2897
R2889
R2881
R2882
R2891
R2890
R2886
R2885
R2884
R2883
R2875
R2871
R2870
R2879
R2878
R2877
R2876
R2869
R2868
R2867
R2866
R2874
R2873
R2872

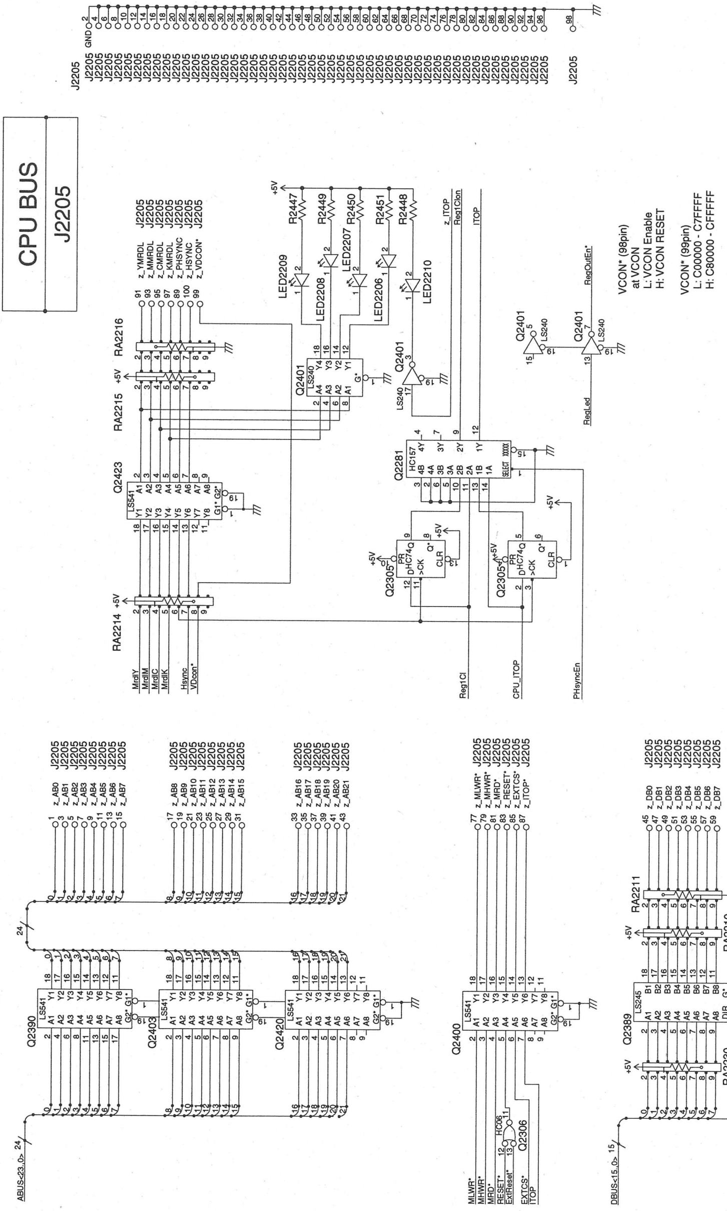
DC Controller Circuit Diagram (5/36)


PIOEX 2
P50
HakiyoseSl
ReFeedPickUp
DeckPickUpSl
MfPickUpSl
LoPickUpSl
UpPickUpSl
P42
FsrClawOnSl
OilPumpSl
FsrWebMtr
FsrWebOnSl
FsrWebSl
P44
ShutterSl_R
ShutterSl_A
RegLed
AtrLed
SaltLedK
SaltLedC
SaltLedM
SaltLedY
P40
PWClnMtrCcwK
PWClnMtrCwK
PWClnMtrCcwC
PWClnMtrCwC
PWClnMtrCcwM
PWClnMtrCwM
PWClnMtrCcwY
PWClnMtrCwY
P32
WstTnMtr
BeltMtr
ScanMtr
DrumMtr
FeedMtr
FsrMtrErrEn
FsrMtrSpeed
FsrMtr
P34
K-RollerSl
ClnWebMtr
TrnsLiftCl
VfMtrDir
VfMtr
ClnBladeSl R
ClnBladeSl A
P30
PHsyncEn
DC24VRmt
ExtReset*
AutoShutOff
DPORT3
DPORT2
DCPRDY*
CPU_ITOP
CP2247
P52
Reg4Cl
Reg3Cl
Reg2Cl
Reg1Cl
PThickLed
OhpLed
RegFreeSl
P54
MtrayFlapSl3
MtrayFlapSl2
MtrayFlapSl1
ExitFlapSl
MtrayMtr
RysDriveCl
MtrayShutSl R
MtrayShutSl A
Q2321
PIOEX 2
R2620
C2345
+5V
CP2212
P51
ReFeedCl
DeckTrnsCl
DeckFeedCl
MfTrnsCl
MfFeedCl
LoFeedCl
UpFeedCl
P43
DrumHeatK
DrumHeatC
DrumHeatM
DrumHeatY
CstHeatUp
FsrHeatUp2
FsrHeatUp1
P45
ExitFanSpeed
PreFsrFanSpeed
ExitLowFan
ExitFan
PreFsrFan
PrimExhaustFan
PrimCornaFan
LsrFan
P41
SWClnMtrCcw
SWClnMtrCw
HopSlct
HopClK2
HopClK
HopClC
HopClM
HopClY
P33
ExpLampK
ExpLampC
ExpLampM
ExpLampY
DevMtrK
DevMtrC
DevMtrM
DevMtrY
P35
BUpSlK R
BUpSlK A
BUpSlC R
BUpSlC A
BUpSlM R
BUpSlM A
BUpSlY R
BUpSlY A
P31
EnvSel
PowerSel
RTS
AdSel2
AdSel1
AdSel0
P53
DeckLiftDown
DeckLiftMtr
MfLiftMtrCcw
MfLiftMtrCw
LoCstLiftMtr
UpCstLiftMtr
P55
MtrSel5
MtrSel4
MtrSel3
MtrSel2
MtrSel1
MtrSel0
RegShttrMtrCcw
RegShttrMtrCw
Q2332
PIOEX 3
R2652
C2357
RESET
MRD*
MHWR*
MLWR*
IOCS5*
IOCS4*
IOCS3*
ABUS<23..0>
DBUS<15..0>

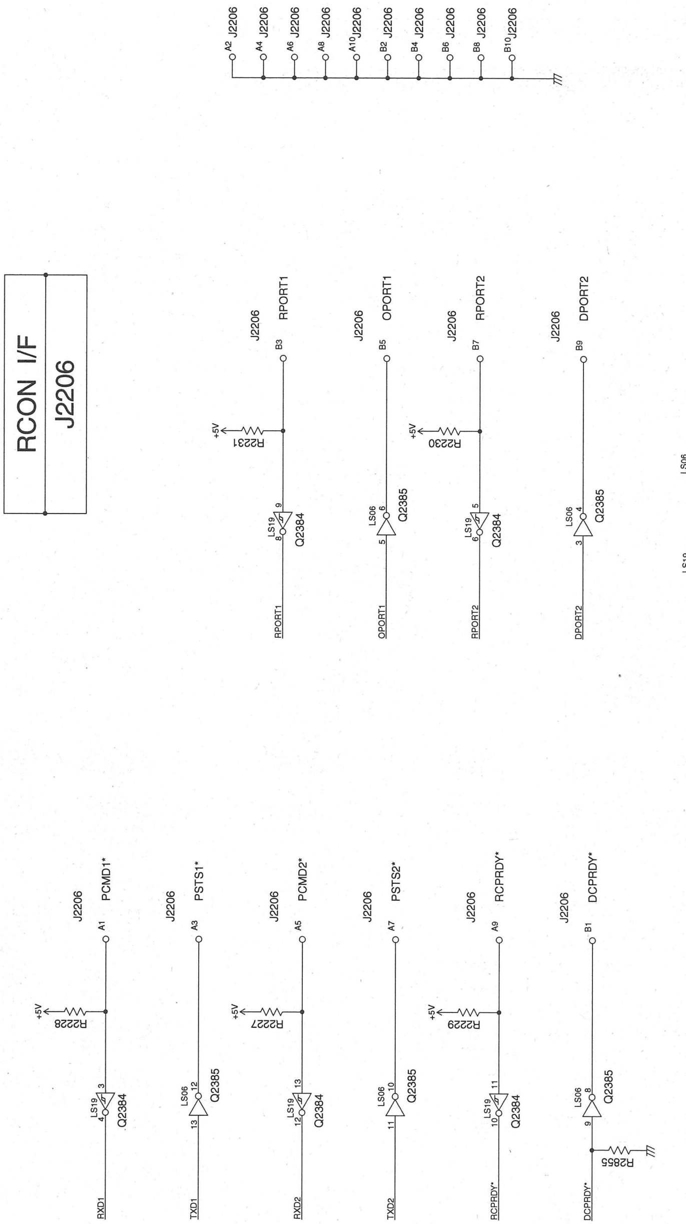
DC Controller Circuit Diagram (6/36)


P84
PIOEX 3
HvDevAcY
HvDevAcM
HvDevAcC
HvDevAcK
HvDevDcY
HvDevDcM
HvDevDcC
HvDevDcK
RESET
IOCS6*
IOCS7*
IOCS8*
MrHWR*
MRD*
R2649
+5V
DBUS<15..0>
ABUS<23..0>
C2354
P80
BfrMtr
BfrEno
BfrSl1
BfrSl2
BfrHpSel
BfrCl
PIOEX4
Q2339
P82
HvPrimY
HvPrimM
HvPrimC
HvPrimK
HvSortAc
HvBoEn
Hv5
HvEn
P60
Count1
Count2
Count3
Count4
Count5
Count6
P64
CountMode0
CountMode1
CountMode2
RES 64_3
FactMode0
FactMode1
FactMode2
FactMode3
RA2228
P62
J2231
Check1
Check2
Check3
Check4
Check5
Check6
Check7
Check8
P70
ChkLed0
ChkLed1
ChkLed2
ChkLed3
ChkLed4
ChkLed5
ChkLed6
ChkLed7
P74
ChkOut0
ChkOut1
ChkOut2
ChkOut3
ChkOut4
ChkOut5
ChkOut6
ChkOut7
P72
ChkKey0
ChkKey1
ChkKey2
ChkKey3
RES 72_4
RES 72_5
RES 72_6
RES 72_7
J2237
J2238
CounterMode
J2237
FactoryMode
J2238
Check-OutPort
J2231

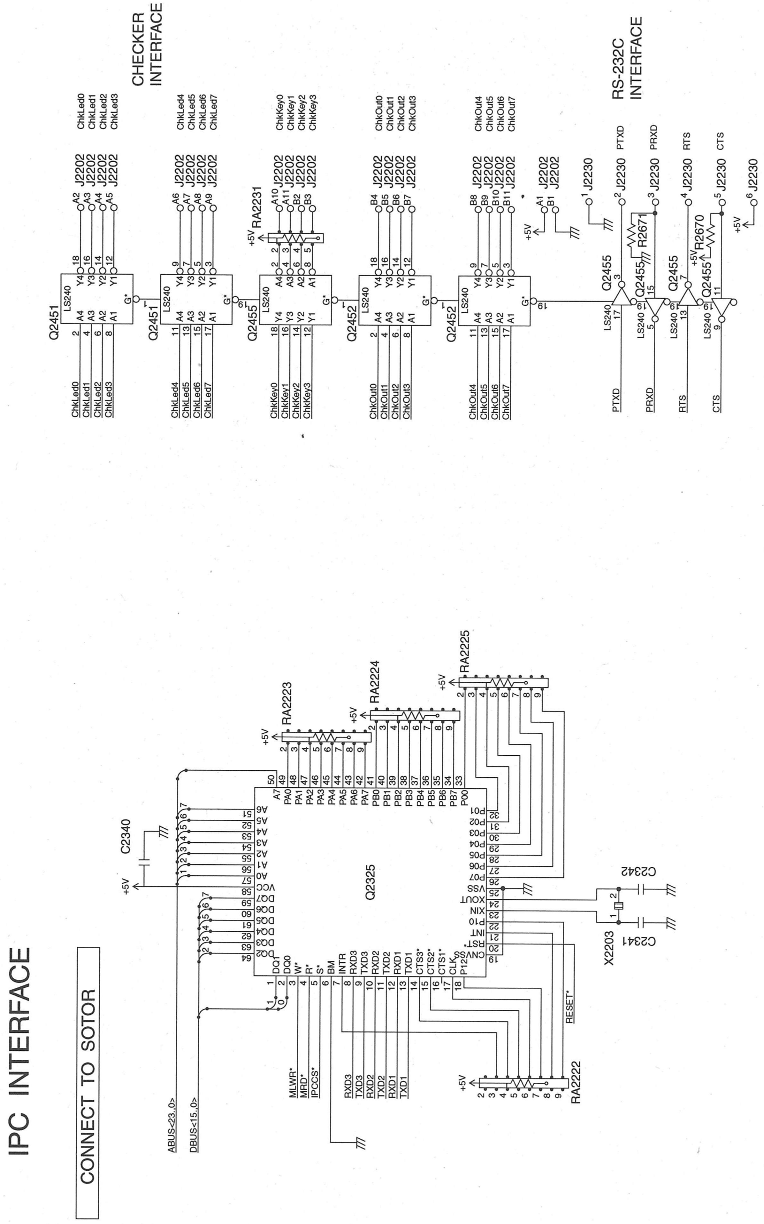
DC Controller Circuit Diagram (7/36)


CPU BUS
J2205
GND
RA2214
RA2215
RA2216
Q2423
LS541
Q2401
LS240
LED2206
LED2207
LED2208
LED2209
LED2210
R2447
R2448
R2449
R2450
R2451
+5V
z_ITOP
Reg1Clon
ITOP
Q2281
HC157
Q2305
Q2304
HC74
RegOutEn*
RegLed
Reg1Cl
CPU_ITOP
PHsyncEn
MrdlY
MrdlM
MrdlC
MrdlK
Hsync
VDcon*
z_YMRDL
z_MMRDL
z_CMRDL
z_KMRDL
z_PHSYNC
z_HSYNC
z_VDCON*
VCON* (98pin)
at VCON
L: VCON Enable
H: VCON RESET
VCON* (99pin)
L: C00000 - C7FFFF
H: C80000 - CFFFFF
Q2390
Q2403
Q2420
Q2400
Q2306
HC08
Q2389
Q2402
LS245
RA2210
RA2211
RA2212
RA2213
RA2229
RA2230
ABUS<23..0>
DBUS<15..0>
MLWR*
MHWR*
MRD*
RESET*
ExtReset*
EXTCS*
ITOP
z_MLWR*
z_MHWR*
z_MRD*
z_RESET*
z_EXTCS*
z_ITOP*
z_AB0 … z_AB21
z_DB0 … z_DB15

DC Controller Circuit Diagram (8/36)

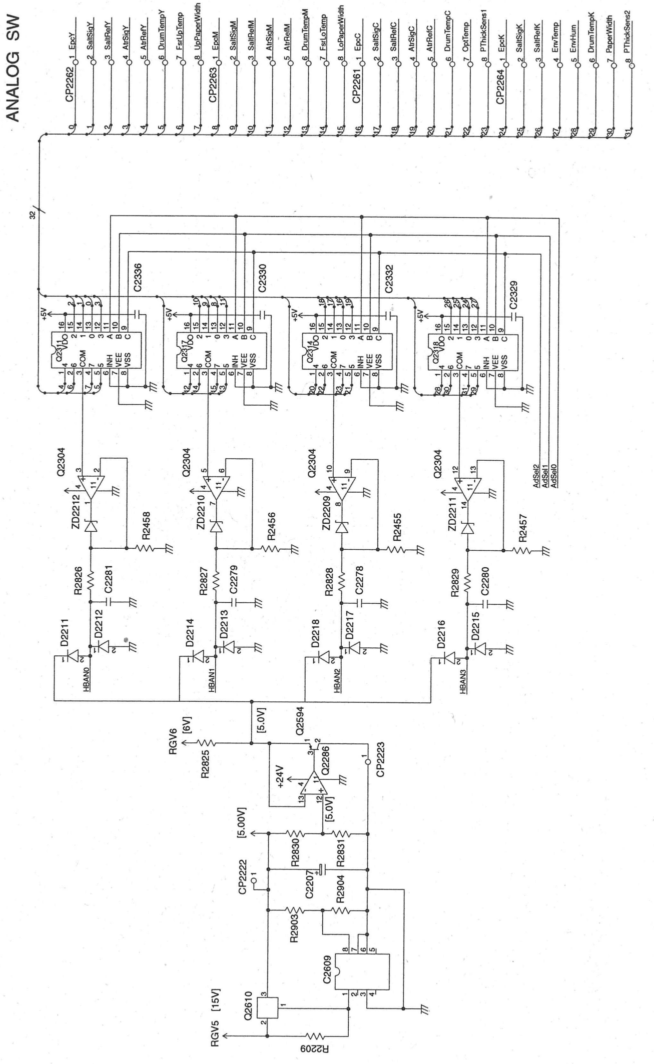

J2206
A2
A4
A6
A8
A10
B2
B4
B6
B8
B10
RCON I/F
J2206
B3
RPORT1
+5V
R2231
LS19
8
9
Q2384
RPORT1
B5
OPORT1
LS06
5
6
Q2385
OPORT1
B7
RPORT2
+5V
R2230
LS19
6
5
Q2384
RPORT2
B9
DPORT2
LS06
3
4
Q2385
DPORT2
LS06
1
2
Q2385
LS19
2
1
Q2384
A1
PCMD1*
+5V
R2228
LS19
4
3
Q2384
RXD1
A3
PSTS1*
LS06
13
12
Q2385
TXD1
A5
PCMD2*
+5V
R2227
LS19
12
13
Q2384
RXD2
A7
PSTS2*
LS06
11
10
Q2385
TXD2
A9
RCPRDY*
+5V
R2229
LS19
10
11
Q2384
RCPRDY*
B1
DCPRDY*
LS06
9
8
Q2385
R2855
DCPRDY*

DC Controller Circuit Diagram (9/36)

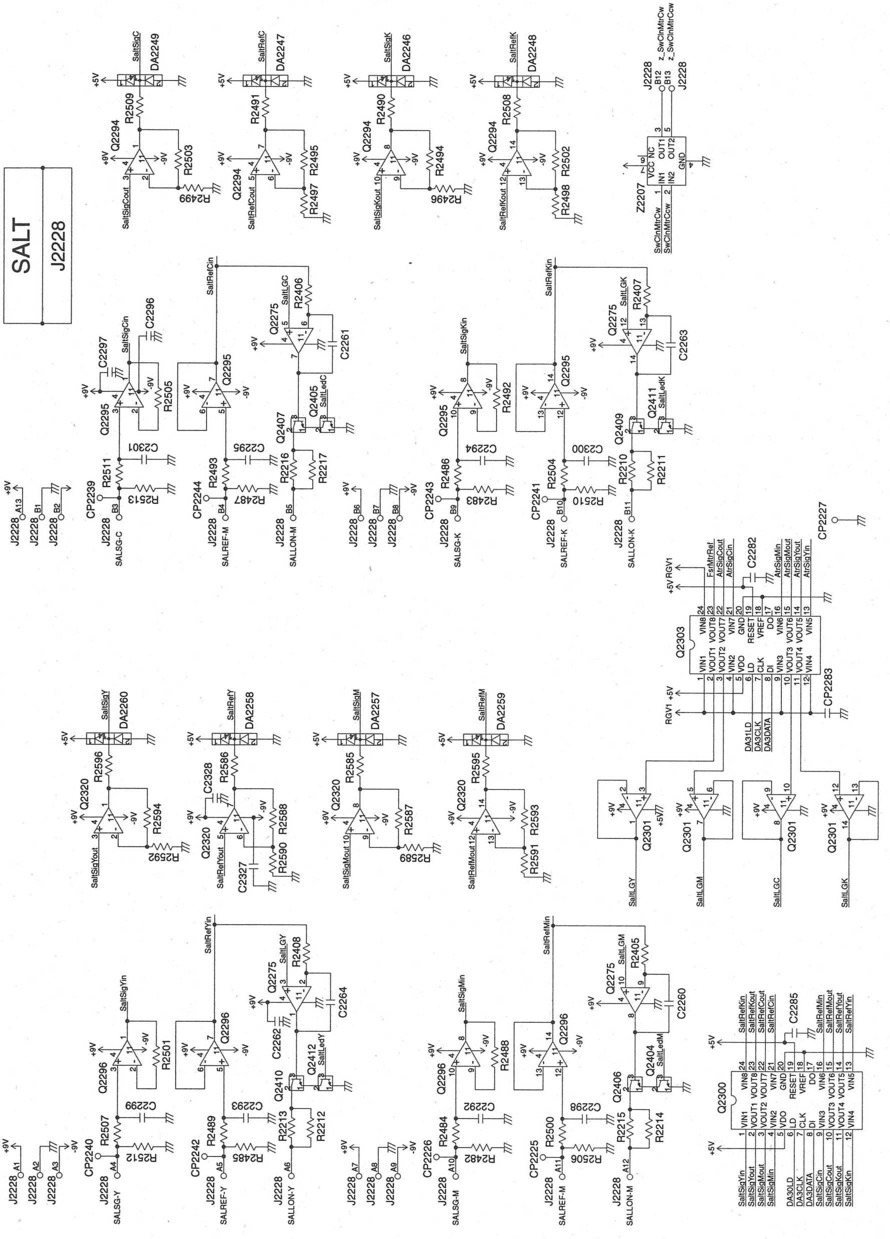

CHECKER INTERFACE
RS-232C INTERFACE
IPC INTERFACE
CONNECT TO SOTOR
Q2451
Q2452
Q2455
Q2325
LS240
RA2231
RA2222
RA2223
RA2224
RA2225
R2670
R2671
C2340
C2341
C2342
X2203
J2202
J2230
ChkLed0
ChkLed1
ChkLed2
ChkLed3
ChkLed4
ChkLed5
ChkLed6
ChkLed7
ChkKey0
ChkKey1
ChkKey2
ChkKey3
ChkOut0
ChkOut1
ChkOut2
ChkOut3
ChkOut4
ChkOut5
ChkOut6
ChkOut7
PTXD
PRXD
RTS
CTS
+5V
ABUS<23..0>
DBUS<15..0>
MLWR*
MRD*
IPCCS*
RXD3
TXD3
RXD2
TXD2
RXD1
TXD1
RESET*

DC Controller Circuit Diagram (10/36)

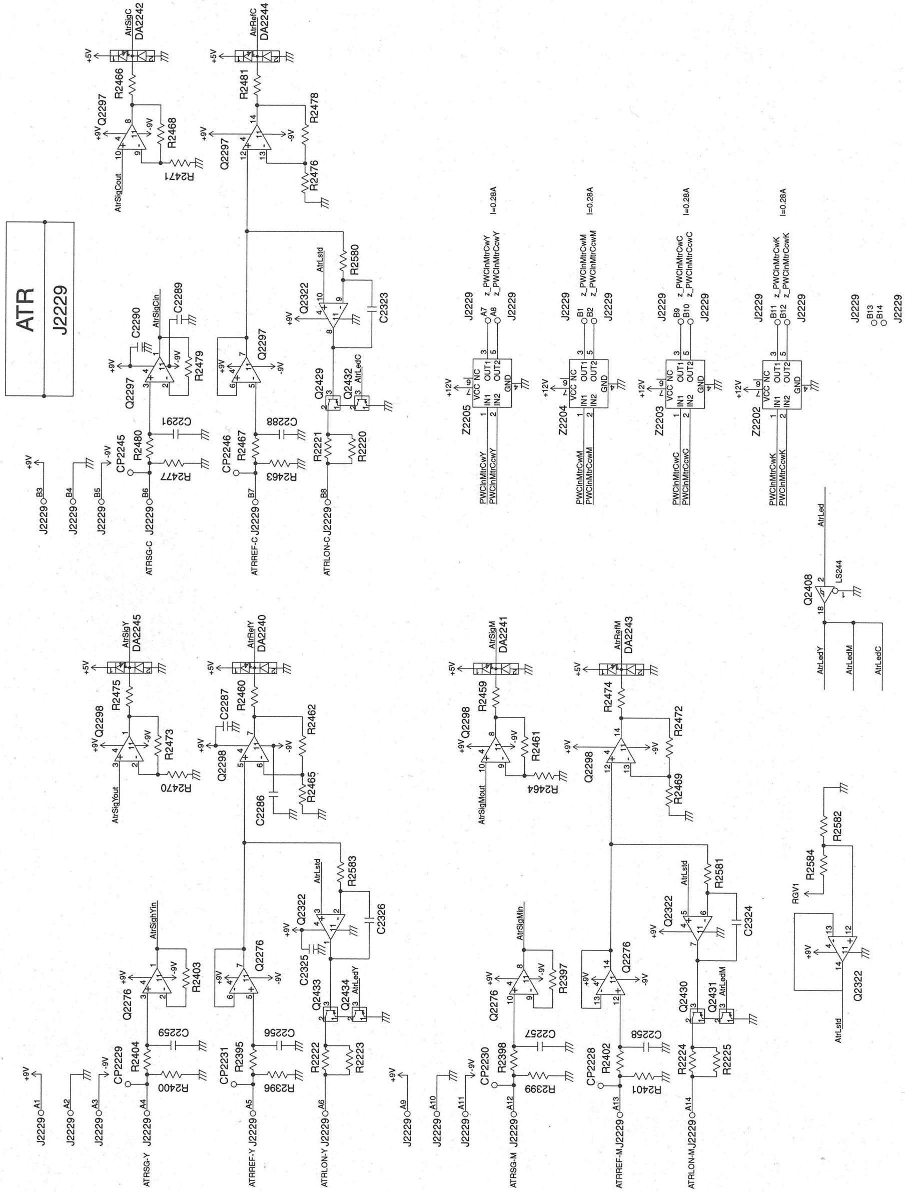
607000	EPC-Y
607002	EPC-M
607004	EPC-C
607006	EPC-K
607008	SALT -SIG -Y
60700A	SALT -SIG -M
60700C	SALT -SIG -C
60700E	SALT -SIG -K
607010	SALT -REF -Y
607012	SALT -REF -M
607014	SALT -REF -C
607016	SALT -REF -K
607018	ATR -SIG -Y
60701A	ATR -SIG -M
60701C	ATR -SIG -C
60701E	ENV -TEMP
607020	ATR -REF -Y
607022	ATR -REF -M
607024	ATR -REF -C
607026	ENV -HUM
607028	DRUM -TEMP -Y
60702A	DRUM -TEMP -M
60702C	DRUM -TEMP -C
60702E	DRUM -TEMP -K
607030	FSR -TEMP -U
607032	FSR -TEMP -L
607034	OPT -TEMP
607036	MF -PR -W
607038	U -PR -W
60703A	L -PR -W
60703C	PR -THCK1
60703E	PR -THCK2


ANALOG SW
CP2262
1 EpcY
2 SaltSigY
3 SaltRefY
4 AtrSigY
5 AtrRefY
6 DrumTempY
7 FsrUpTemp
8 UpPaperWidth
CP2263
1 EpcM
2 SaltSigM
3 SaltRefM
4 AtrSigM
5 AtrRefM
6 DrumTempM
7 FsrLoTemp
8 LoPaperWidth
CP2261
1 EpcC
2 SaltSigC
3 SaltRefC
4 AtrSigC
5 AtrRefC
6 DrumTempC
7 OptTemp
8 PThickSens1
CP2264
1 EpcK
2 SaltSigK
3 SaltRefK
4 EnvTemp
5 EnvHum
6 DrumTempK
7 PaperWidth
8 PThickSens2
32
+5V
C2336
C2330
C2332
C2329
VDD
COM
INH
VEE
VSS
A
B
C
Q2304
ZD2212
ZD2210
ZD2209
ZD2211
R2458
R2456
R2455
R2457
R2826
R2827
R2828
R2829
C2281
C2279
C2278
C2280
D2211
D2212
D2214
D2213
D2218
D2217
D2216
D2215
HBAN0
HBAN1
HBAN2
HBAN3
AdSel2
AdSel1
AdSel0
RGV6
[6V]
R2825
[5.0V]
Q2594
Q2286
CP2223
+24V
[5.00V]
R2830
R2831
C2207
R2904
CP2222
R2903
C2609
Q2610
RGV5
[15V]
R2209

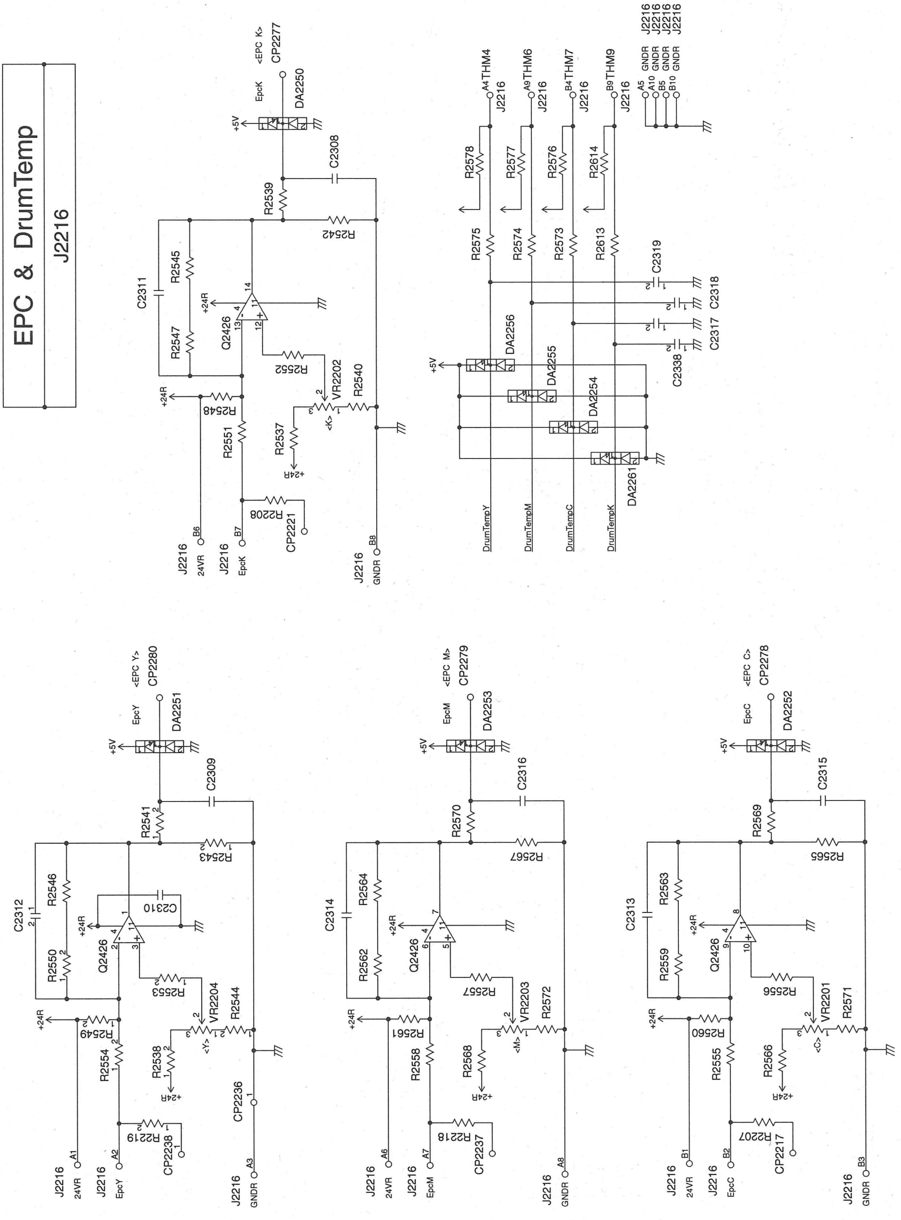
DC Controller Circuit Diagram (11/36)


SALT
J2228
SaltSigC
DA2249
R2509
Q2294
R2503
R2499
SaltSigCout
SaltRefC
DA2247
R2491
R2495
R2497
SaltRefCout
SaltSigK
DA2246
R2490
R2494
R2496
SaltSigKout
SaltRefK
DA2248
R2508
R2502
R2498
SaltRefKout
J2228
B12
B13
z_SwClnMtrCw
z_SwClnMtrCcw
Z2207
SwClnMtrCw
SwClnMtrCcw
VCC
NC
IN1
IN2
OUT1
OUT2
GND
SaltSigCin
C2296
C2297
Q2295
R2505
C2301
R2511
R2513
CP2239
SALSG-C
SaltRefCin
R2493
R2487
C2295
CP2244
SALREF-M
Q2275
SaltLGC
R2406
C2261
Q2405
SaltLedC
Q2407
R2216
R2217
SALLON-M
SaltSigKin
R2492
C2294
R2486
R2483
CP2243
SALSG-K
SaltRefKin
R2504
R2510
C2300
CP2241
SALREF-K
SaltLGK
R2407
C2263
Q2411
SaltLedK
Q2409
R2210
R2211
SALLON-K
CP2227
Q2303
FsrMtrRef
AtrSigCout
AtrSigCin
C2282
AtrSigMin
AtrSigMout
AtrSigYout
AtrSigYin
RGV1
+5V
DA31LD
DA3CLK
DA3DATA
CP2283
VIN1
VOUT1
VOUT2
VIN2
VDO
LD
CLK
DI
VIN3
VOUT3
VOUT4
VIN4
VIN8
VOUT8
VOUT7
VIN7
RESET
VREF
DO
VIN6
VOUT6
VOUT5
VIN5
SaltSigY
DA2260
R2596
Q2320
R2594
R2592
SaltSigYout
SaltRefY
DA2258
R2586
C2328
R2588
R2590
C2327
SaltRefYout
SaltSigM
DA2257
R2585
R2587
R2589
SaltSigMout
SaltRefM
DA2259
R2595
R2593
R2591
SaltRefMout
Q2301
SaltLGY
SaltLGM
SaltLGC
SaltLGK
SaltSigYin
Q2296
R2501
C2299
R2507
R2512
CP2240
SALSG-Y
SaltRefYin
R2489
R2485
C2293
CP2242
SALREF-Y
R2408
C2264
C2262
Q2412
SaltLedY
Q2410
R2213
R2212
SALLON-Y
SaltSigMin
R2488
C2292
R2484
R2482
CP2226
SALSG-M
SaltRefMin
R2500
R2506
C2298
CP2225
SALREF-M
R2405
C2260
Q2404
SaltLedM
Q2406
R2215
R2214
SALLON-M
Q2300
SaltRefKin
SaltRefKout
SaltRefCout
SaltRefCin
C2285
SaltRefMin
SaltRefMout
SaltRefYout
SaltRefYin
SaltSigYin
SaltSigYout
SaltSigMout
SaltSigMin
DA30LD
DA3CLK
DA3DATA
SaltSigCin
SaltSigCout
SaltSigKout
SaltSigKin
+9V
-9V
+5V

DC Controller Circuit Diagram (12/36)

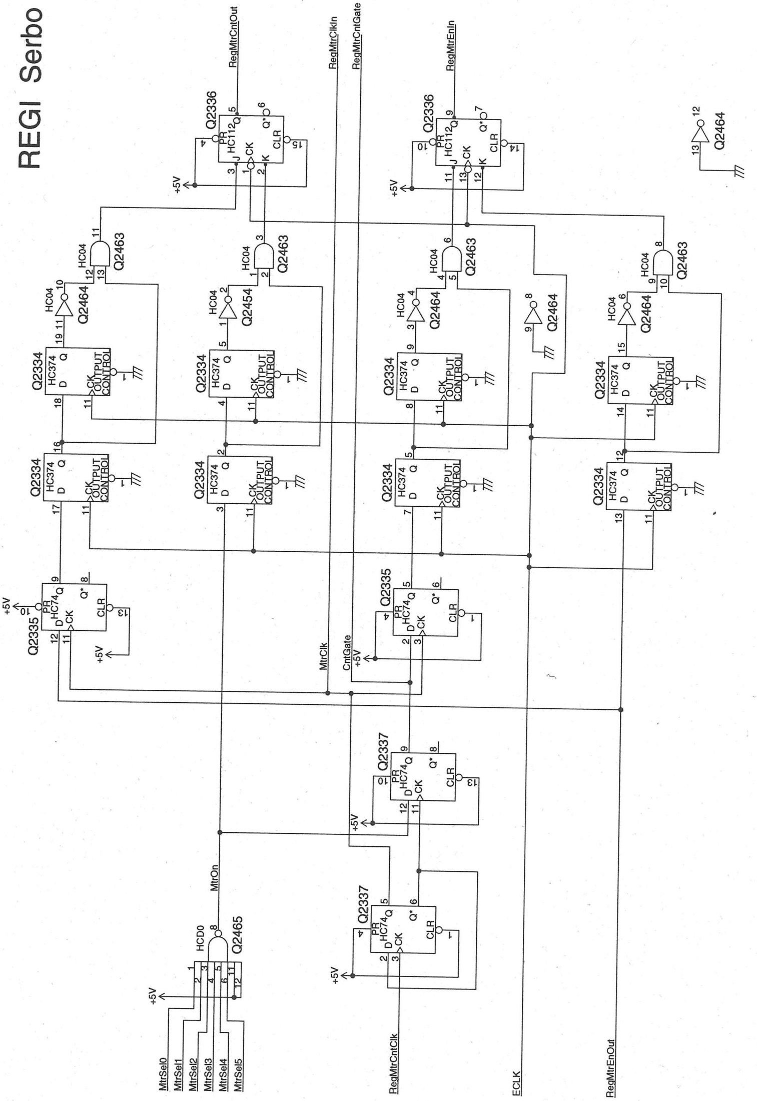

ATR
J2229
AtrSigC
DA2242
AtrRefC
DA2244
AtrSigY
DA2245
AtrRefY
DA2240
AtrSigM
DA2241
AtrRefM
DA2243
+5V
+9V
-9V
+12V
Q2297
Q2298
Q2276
Q2322
Q2429
Q2432
Q2433
Q2434
Q2430
Q2431
Q2408
LS244
Z2205
Z2204
Z2203
Z2202
VCC NC
IN1
IN2
OUT1
OUT2
GND
I=0.28A
PWClnMtrCwY
PWClnMtrCcwY
z_PWClnMtrCwY
z_PWClnMtrCcwY
PWClnMtrCwM
PWClnMtrCcwM
z_PWClnMtrCwM
z_PWClnMtrCcwM
PWClnMtrCwC
PWClnMtrCcwC
z_PWClnMtrCwC
z_PWClnMtrCcwC
PWClnMtrCwK
PWClnMtrCcwK
z_PWClnMtrCwK
z_PWClnMtrCcwK
AtrSigCout
AtrSigCin
AtrSigYout
AtrSighYin
AtrSigMout
AtrSigMin
AtrLstd
AtrLedC
AtrLedY
AtrLedM
AtrLed
RGV1
ATRSG-C
ATRREF-C
ATRLON-C
ATRSG-Y
ATRREF-Y
ATRLON-Y
ATRSG-M
ATRREF-M
ATRLON-M
CP2245
CP2246
CP2229
CP2231
CP2230
CP2228
R2466
R2468
R2471
R2481
R2478
R2476
R2580
R2479
R2480
R2477
R2467
R2463
R2221
R2220
R2475
R2473
R2470
R2460
R2462
R2465
R2583
R2403
R2404
R2400
R2395
R2396
R2222
R2223
R2459
R2461
R2464
R2474
R2472
R2469
R2581
R2397
R2398
R2399
R2402
R2401
R2224
R2225
R2584
R2582
C2290
C2289
C2291
C2288
C2323
C2287
C2286
C2326
C2325
C2259
C2256
C2257
C2258
C2324
A1
A2
A3
A4
A5
A6
A9
A10
A11
A12
A13
A14
A7
A8
B1
B2
B3
B4
B5
B6
B7
B8
B9
B10
B11
B12
B13
B14

DC Controller Circuit Diagram (13/36)

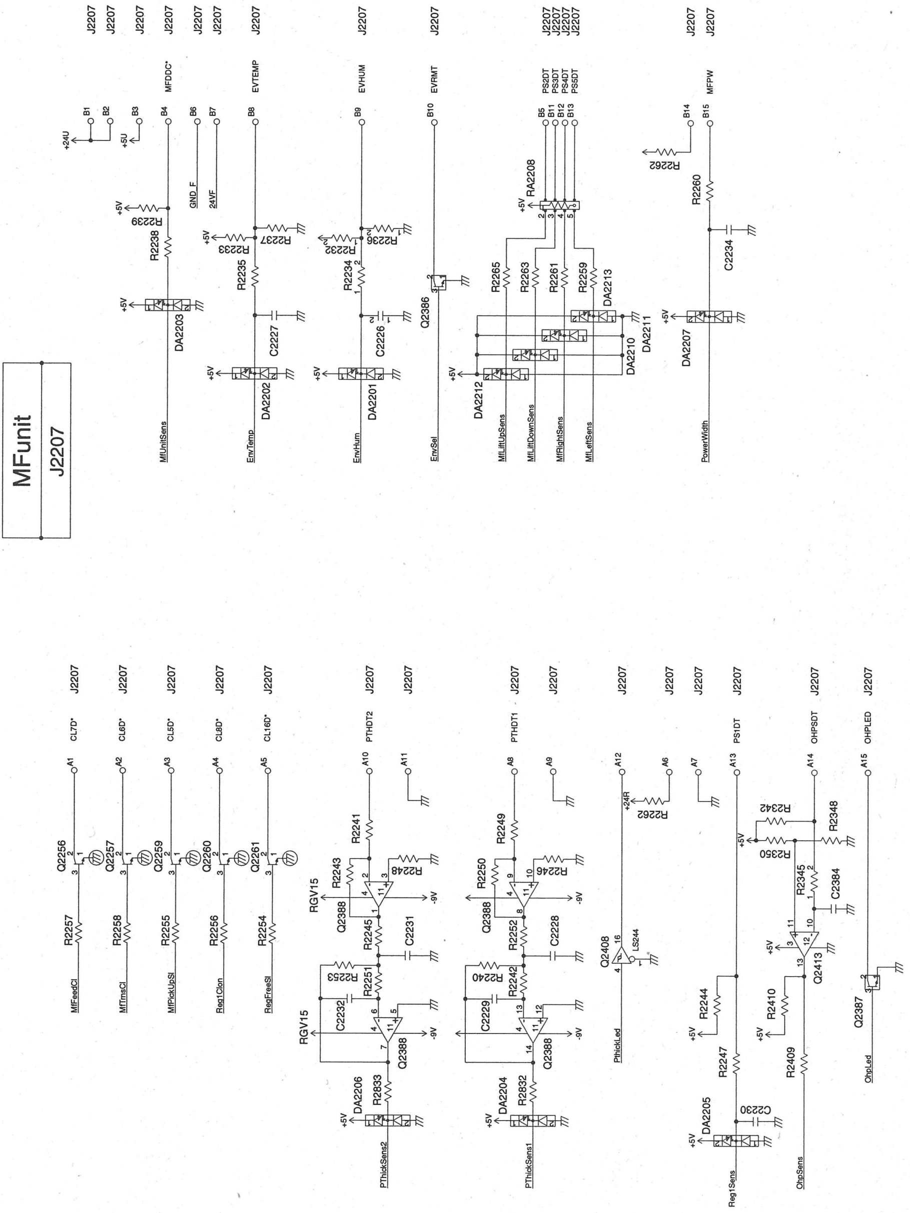

EPC & DrumTemp
J2216
<EPC K> CP2277
EpcK
DA2250
C2308
R2539
R2542
C2311
R2545
R2547
Q2426
R2552
VR2202
<K>
R2540
R2548
R2551
R2537
R2208
CP2221
J2216 24VR B6
J2216 EpcK B7
J2216 GNDR B8
+5V
+24R
A4 THM4 J2216
A9 THM6 J2216
B4 THM7 J2216
B9 THM9 J2216
A5 GNDR J2216
A10 GNDR J2216
B5 GNDR J2216
B10 GNDR J2216
R2578
R2577
R2576
R2614
R2575
R2574
R2573
R2613
C2319
C2318
C2317
C2338
DA2256
DA2255
DA2254
DA2261
DrumTempY
DrumTempM
DrumTempC
DrumTempK
<EPC Y> CP2280
EpcY
DA2251
C2309
R2541
R2543
C2312
R2546
C2310
R2550
Q2426
R2553
VR2204
<Y>
R2544
R2549
R2554
R2538
R2219
CP2238
CP2236
J2216 24VR A1
J2216 EpcY A2
J2216 GNDR A3
<EPC M> CP2279
EpcM
DA2253
C2316
R2570
R2567
C2314
R2564
R2562
Q2426
R2557
VR2203
<M>
R2572
R2561
R2558
R2568
R2218
CP2237
J2216 24VR A6
J2216 EpcM A7
J2216 GNDR A8
<EPC C> CP2278
EpcC
DA2252
C2315
R2569
R2565
C2313
R2563
R2559
Q2426
R2556
VR2201
<C>
R2571
R2560
R2555
R2566
R2207
CP2217
J2216 24VR B1
J2216 EpcC B2
J2216 GNDR B3

DC Controller Circuit Diagram (14/36)

REGI Serbo Controll

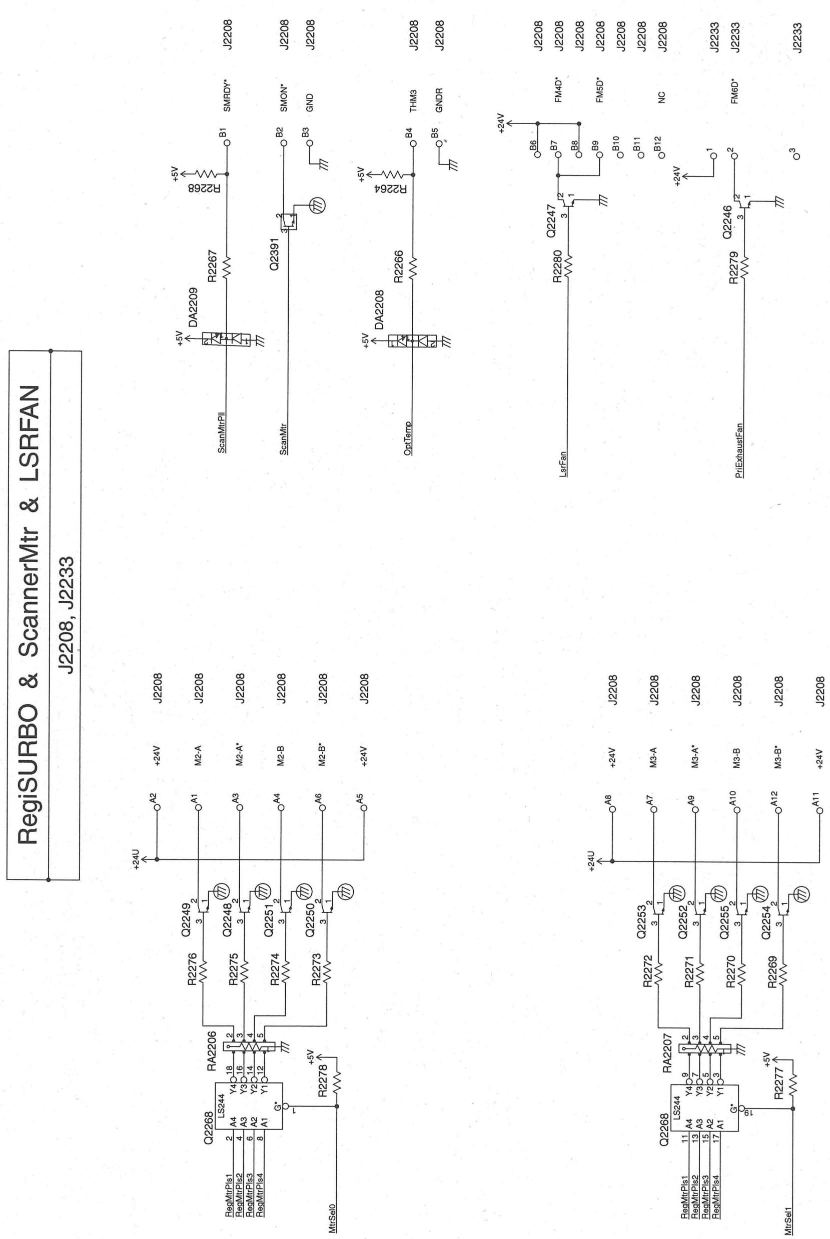

RegMtrCntOut
RegMtrClkIn
RegMtrCntGate
RegMtrEnIn
Q2336
HC112
PR
J
CK
K
Q
Q*
CLR
+5V
Q2463
HC04
Q2464
Q2454
Q2334
HC374
D
Q
CK
OUTPUT CONTROL
Q2335
HC74
Q2337
MtrClk
CntGate
MtrOn
HCD0
Q2465
MtrSel0
MtrSel1
MtrSel2
MtrSel3
MtrSel4
MtrSel5
RegMtrCntClk
ECLK
RegMtrEnOut

DC Controller Circuit Diagram (15/36)

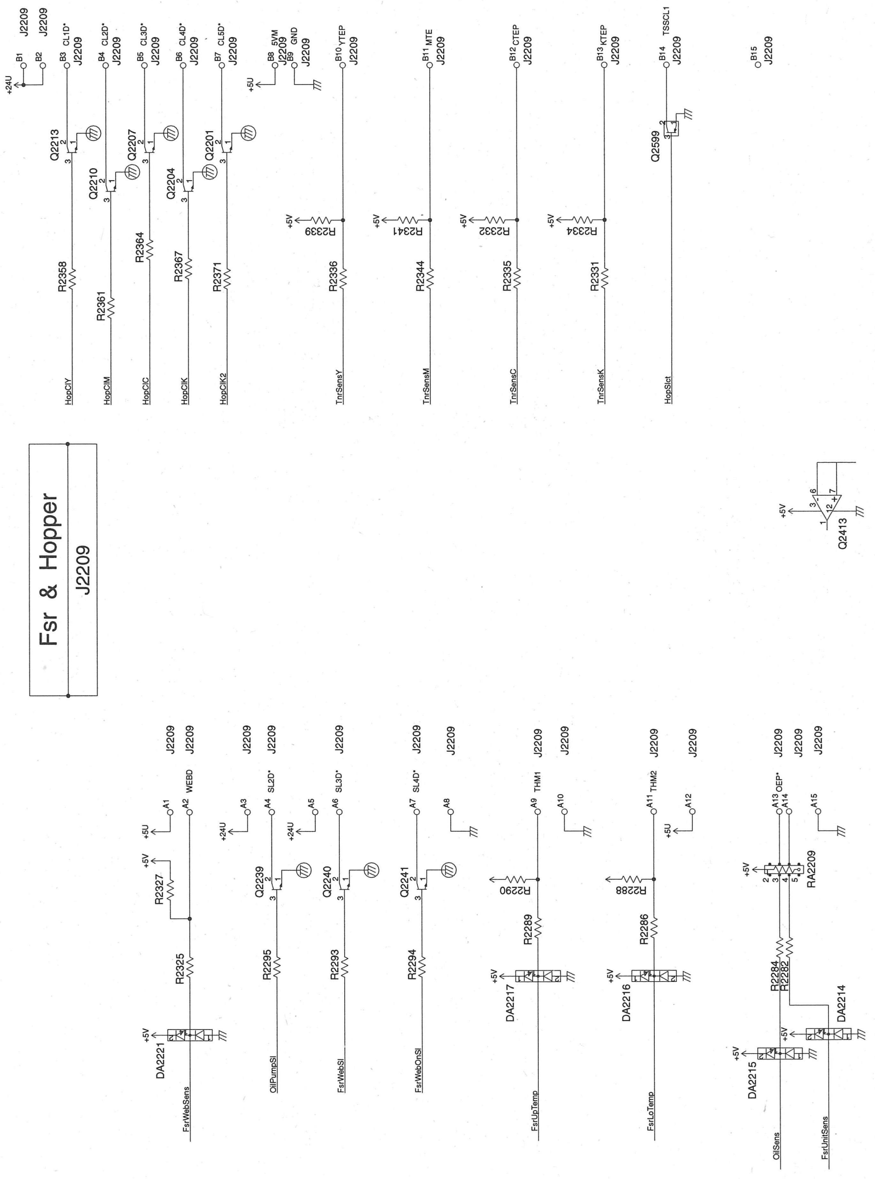

MFunit
J2207
J2207
+24U
B1
B2
+5U
B3
B4
MFDDC*
R2239
R2238
+5V
DA2203
MfUnitSens
B6
GND_F
B7
24VF
B8
EVTEMP
R2237
R2233
R2235
C2227
DA2202
EnvTemp
B9
EVHUM
R2236
R2232
R2234
C2226
DA2201
EnvHum
B10
EVRMT
Q2386
EnvSel
B5
B11
B12
B13
PS2DT
PS3DT
PS4DT
PS5DT
RA2208
R2265
R2263
R2261
R2259
DA2213
DA2211
DA2210
DA2212
MfLiftUpSens
MfLiftDownSens
MfRightSens
MfLeftSens
B14
B15
MFPW
R2262
R2260
C2234
DA2207
PowerWidth
A1
CL7D*
Q2256
R2257
MfFeedCl
A2
CL6D*
Q2257
R2258
MfTrnsCl
A3
CL5D*
Q2259
R2255
MfPickUpSl
A4
CL8D*
Q2260
R2256
Reg1Clon
A5
CL16D*
Q2261
R2254
RegFreeSl
A10
PTHDT2
A11
R2241
R2243
R2248
RGV15
Q2388
R2245
C2231
R2253
R2251
C2232
DA2206
R2833
PThickSens2
A8
PTHDT1
A9
R2249
R2250
R2246
R2252
C2228
R2240
R2242
C2229
DA2204
R2832
PThickSens1
A12
+24R
A6
R2262
Q2408
LS244
PthickLed
A7
A13
PS1DT
R2244
R2247
C2230
DA2205
Reg1Sens
A14
OHPSDT
R2342
R2350
R2348
R2345
C2384
Q2413
R2410
R2409
OhpSens
A15
OHPLED
Q2387
OhpLed
+5V
-9V

COPYRIGHT © 2001 CANON INC.

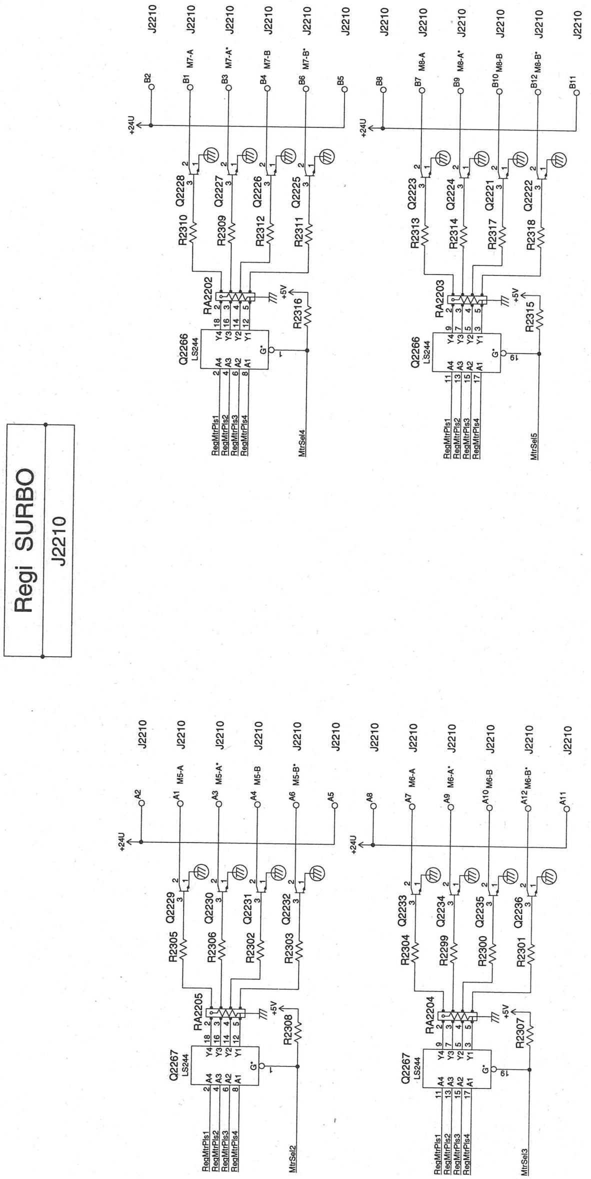
DC Controller Circuit Diagram (16/36)


RegiSURBO & ScannerMtr & LSRFAN
J2208, J2233
ScanMtrPll
DA2209
R2267
R2268
+5V
B1
SMRDY*
J2208
ScanMtr
Q2391
B2
SMON*
B3
GND
OptTemp
DA2208
R2266
R2264
B4
THM3
B5
GNDR
LsrFan
R2280
Q2247
+24V
B6
B7
FM4D*
B8
B9
FM5D*
B10
B11
B12
NC
PriExhaustFan
R2279
Q2246
1
2
FM6D*
3
J2233
RegMtrPls1
RegMtrPls2
RegMtrPls3
RegMtrPls4
MtrSel0
Q2268
LS244
A4
A3
A2
A1
Y4
Y3
Y2
Y1
G*
RA2206
R2278
R2276
R2275
R2274
R2273
Q2249
Q2248
Q2251
Q2250
+24U
A2
A1
A3
A4
A6
A5
+24V
M2-A
M2-A*
M2-B
M2-B*
MtrSel1
RA2207
R2277
R2272
R2271
R2270
R2269
Q2253
Q2252
Q2255
Q2254
A8
A7
A9
A10
A12
A11
M3-A
M3-A*
M3-B
M3-B*

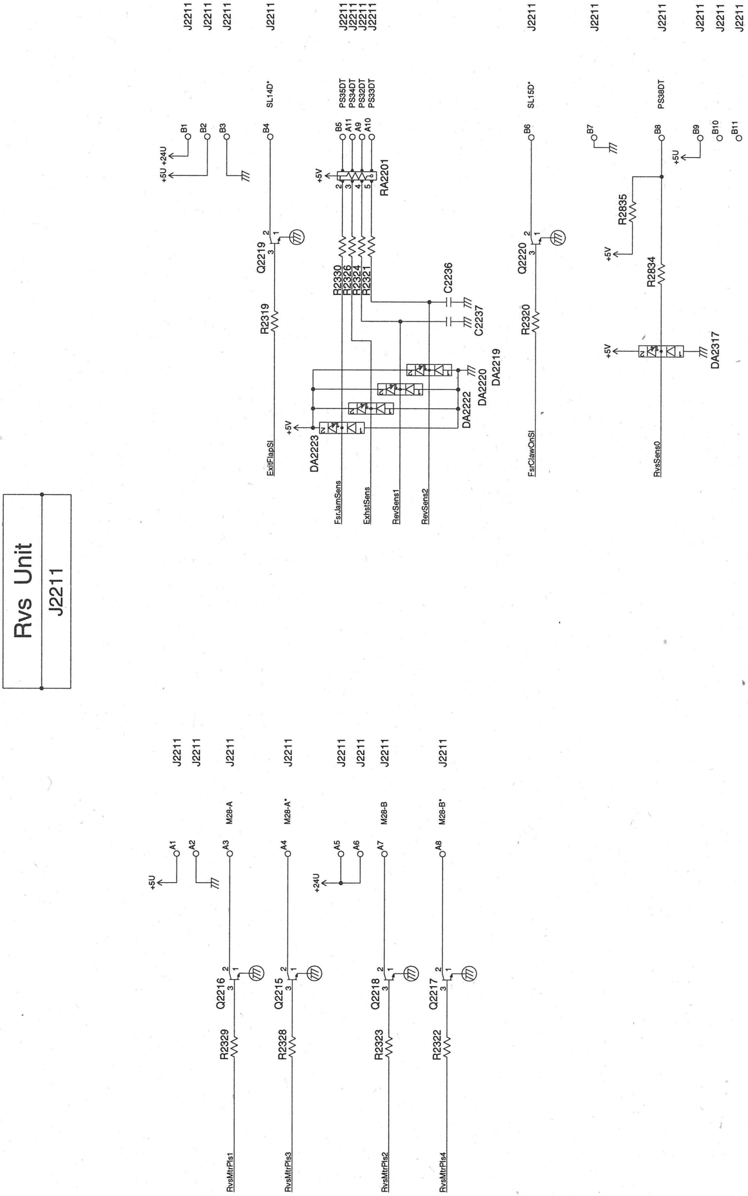
DC Controller Circuit Diagram (17/36)


Fsr & Hopper
J2209
+24U
B1 J2209
B2 J2209
B3 CL1D* J2209
B4 CL2D* J2209
B5 CL3D* J2209
B6 CL4D* J2209
B7 CL5D* J2209
B8 5VM J2209
B9 GND J2209
+5U
B10 YTEP J2209
B11 MTE J2209
B12 CTEP J2209
B13 KTEP J2209
B14 TSSCL1 J2209
B15 J2209
Q2213
Q2210
Q2207
Q2204
Q2201
Q2599
R2358
R2361
R2364
R2367
R2371
R2339
R2336
R2341
R2344
R2332
R2335
R2334
R2331
+5V
HopClY
HopClM
HopClC
HopClK
HopClK2
TnrSensY
TnrSensM
TnrSensC
TnrSensK
HopSlct
Q2413
A1 +5U J2209
A2 WEBD J2209
A3 +24U J2209
A4 SL2D* J2209
A5 +24U J2209
A6 SL3D* J2209
A7 SL4D* J2209
A8 J2209
A9 THM1 J2209
A10 J2209
A11 THM2 J2209
A12 +5U J2209
A13 OEP* J2209
A14 J2209
A15 J2209
R2327
R2325
DA2221
Q2239
R2295
Q2240
R2293
Q2241
R2294
R2290
R2289
DA2217
R2288
R2286
DA2216
RA2209
R2284
R2282
DA2214
DA2215
FsrWebSens
OilPumpSl
FsrWebSl
FsrWebOnSl
FsrUpTemp
FsrLoTemp
OilSens
FsrUnitSens

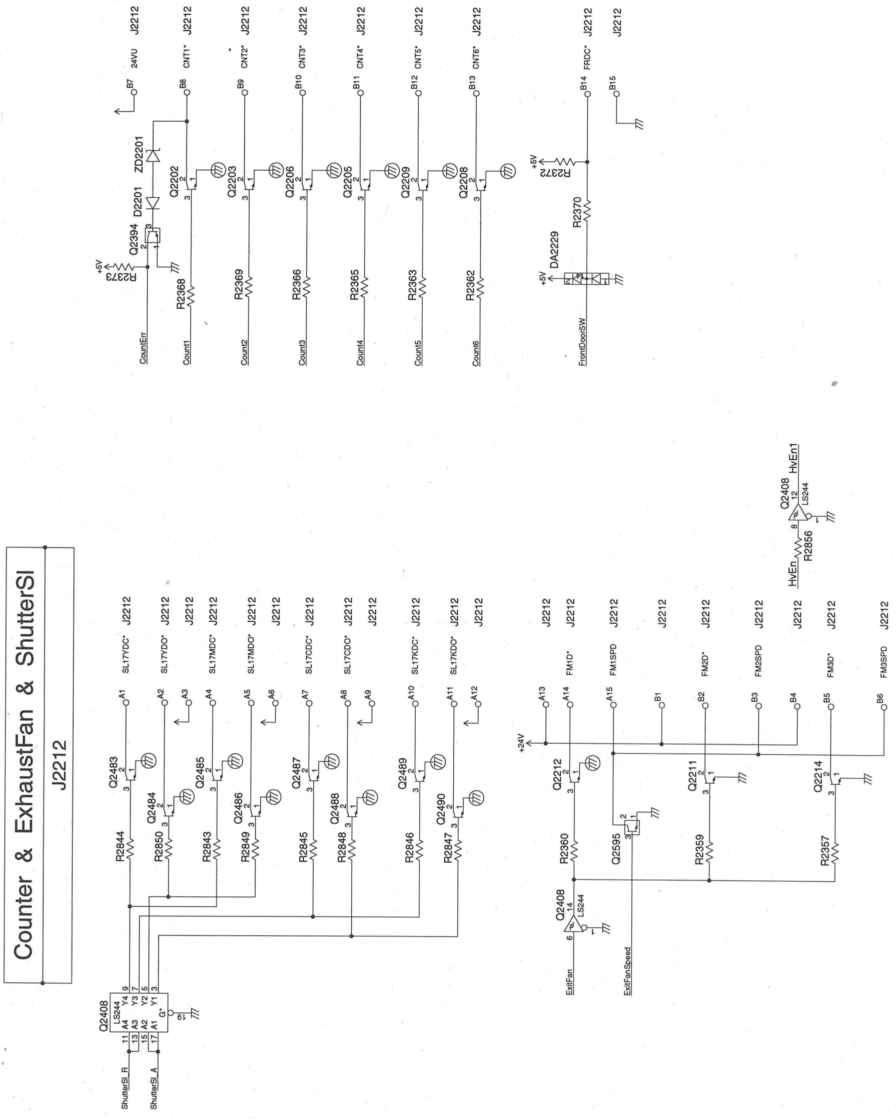
DC Controller Circuit Diagram (18/36)


Regi SURBO
J2210
+24U
+5V
B1 M7-A
B2
B3 M7-A*
B4 M7-B
B5
B6 M7-B*
B7 M8-A
B8
B9 M8-A*
B10 M8-B
B11
B12 M8-B*
Q2228
Q2227
Q2226
Q2225
Q2223
Q2224
Q2221
Q2222
R2310
R2309
R2312
R2311
R2313
R2314
R2317
R2318
RA2202
RA2203
R2316
R2315
Q2266
LS244
RegMtrPls1
RegMtrPls2
RegMtrPls3
RegMtrPls4
MtrSel4
MtrSel5
A1 M5-A
A2
A3 M5-A*
A4 M5-B
A5
A6 M5-B*
A7 M6-A
A8
A9 M6-A*
A10 M6-B
A11
A12 M6-B*
Q2229
Q2230
Q2231
Q2232
Q2233
Q2234
Q2235
Q2236
R2305
R2306
R2302
R2303
R2304
R2299
R2300
R2301
RA2205
RA2204
R2308
R2307
Q2267
MtrSel2
MtrSel3
G*
Y1
Y2
Y3
Y4
A1
A2
A3
A4

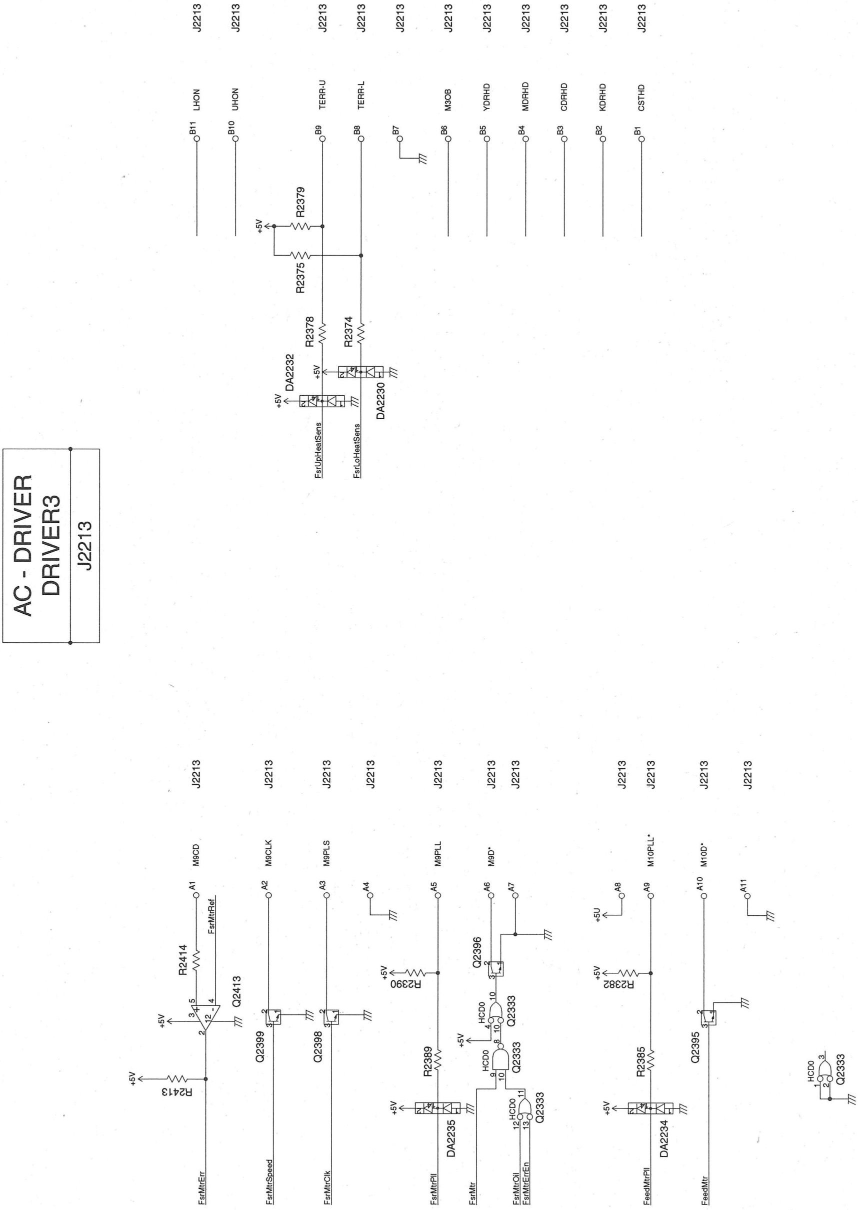
DC Controller Circuit Diagram (19/36)


Rvs Unit
J2211
J2211
B1
B2
B3
B4
+5U +24U
SL14D*
Q2219
R2319
ExitFlapSl
B5
A11
A9
A10
PS35DT
PS34DT
PS32DT
PS33DT
+5V
RA2201
R2330
R2326
R2324
R2321
C2236
C2237
DA2219
DA2220
DA2222
DA2223
FsrJamSens
ExhstSens
RevSens1
RevSens2
B6
SL15D*
Q2220
R2320
FstClawOnSl
B7
B8
PS38DT
R2835
R2834
DA2317
RvsSens0
B9
B10
B11
+5U
A1
A2
A3
M28-A
A4
M28-A*
A5
A6
+24U
A7
M28-B
A8
M28-B*
Q2216
Q2215
Q2218
Q2217
R2329
R2328
R2323
R2322
RvsMtrPls1
RvsMtrPls3
RvsMtrPls2
RvsMtrPls4

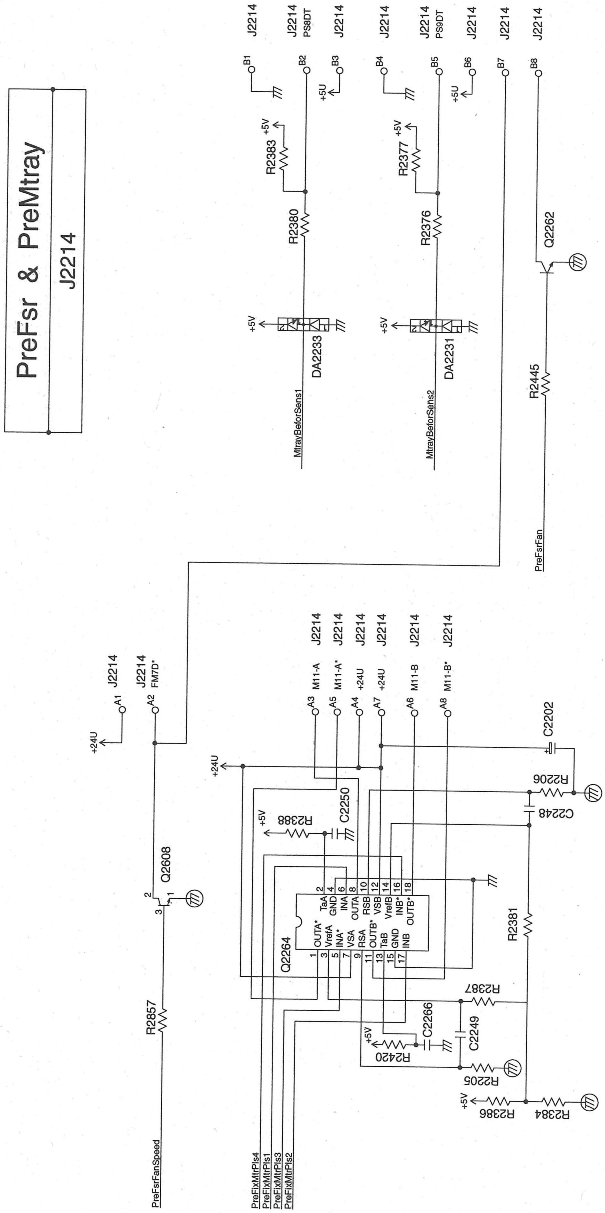
DC Controller Circuit Diagram (20/36)


Counter & ExhaustFan & ShutterSl
J2212
CountErr
R2373
+5V
Q2394
D2201
ZD2201
B7 24VU J2212
Count1 R2368 Q2202 B8 CNT1* J2212
Count2 R2369 Q2203 B9 CNT2* J2212
Count3 R2366 Q2206 B10 CNT3* J2212
Count4 R2365 Q2205 B11 CNT4* J2212
Count5 R2363 Q2209 B12 CNT5* J2212
Count6 R2362 Q2208 B13 CNT6* J2212
FrontDoorSW
DA2229
R2370
R2372
B14 FRDC* J2212
B15 J2212
ShutterSl_R
ShutterSl_A
Q2408
LS244
A4 Y4
A3 Y3
A2 Y2
A1 Y1
G*
R2844 Q2483 A1 SL17YDC* J2212
R2850 Q2484 A2 SL17YDO* J2212
A3 J2212
R2843 Q2485 A4 SL17MDC* J2212
R2849 Q2486 A5 SL17MDO* J2212
A6 J2212
R2845 Q2487 A7 SL17CDC* J2212
R2848 Q2488 A8 SL17CDO* J2212
A9 J2212
R2846 Q2489 A10 SL17KDC* J2212
R2847 Q2490 A11 SL17KDO* J2212
A12 J2212
ExitFan
ExitFanSpeed
Q2408 LS244
+24V
A13 J2212
R2360 Q2212 A14 FM1D* J2212
Q2595 A15 FM1SPD J2212
B1 J2212
R2359 Q2211 B2 FM2D* J2212
B3 FM2SPD J2212
B4 J2212
R2357 Q2214 B5 FM3D* J2212
B6 FM3SPD J2212
HvEn
R2856
Q2408
LS244
HvEn1

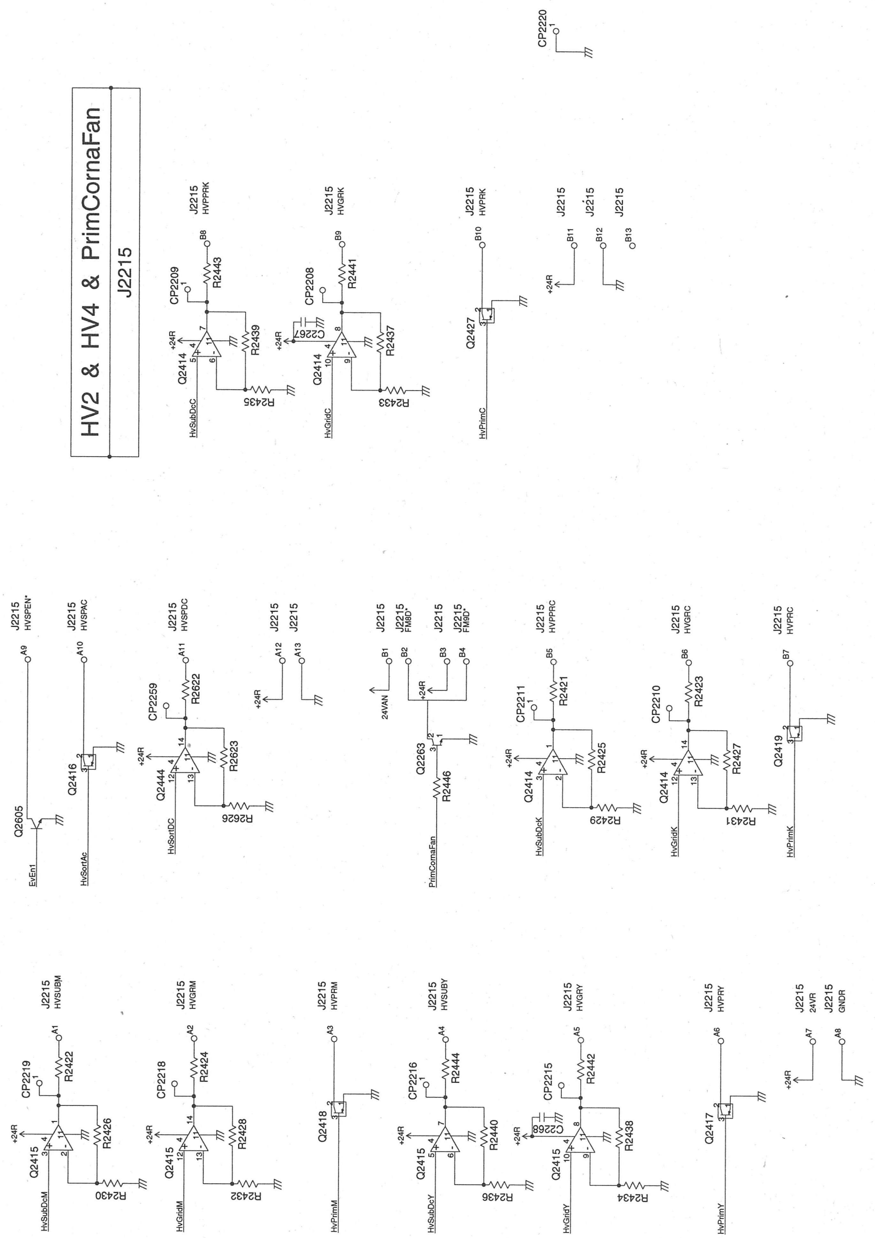
DC Controller Circuit Diagram (21/36)


AC - DRIVER
DRIVER3
J2213
B11 LHON
B10 UHON
B9 TERR-U
B8 TERR-L
B7
B6 M3OB
B5 YDRHD
B4 MDRHD
B3 CDRHD
B2 KDRHD
B1 CSTHD
R2379
R2375
R2378
R2374
DA2232
DA2230
+5V
FsrUpHeatSens
FsrLoHeatSens
A1 M9CD
A2 M9CLK
A3 M9PLS
A4
A5 M9PLL
A6 M9D*
A7
A8
A9 M10PLL*
A10 M10D*
A11
+5U
FsrMtrRef
R2414
Q2413
R2413
Q2399
Q2398
R2390
R2389
DA2235
Q2396
HCD0
Q2333
R2382
R2385
DA2234
Q2395
FsrMtrErr
FsrMtrSpeed
FsrMtrClk
FsrMtrPll
FsrMtr
FsrMtrOil
FsrMtrErrEn
FeedMtrPll
FeedMtr

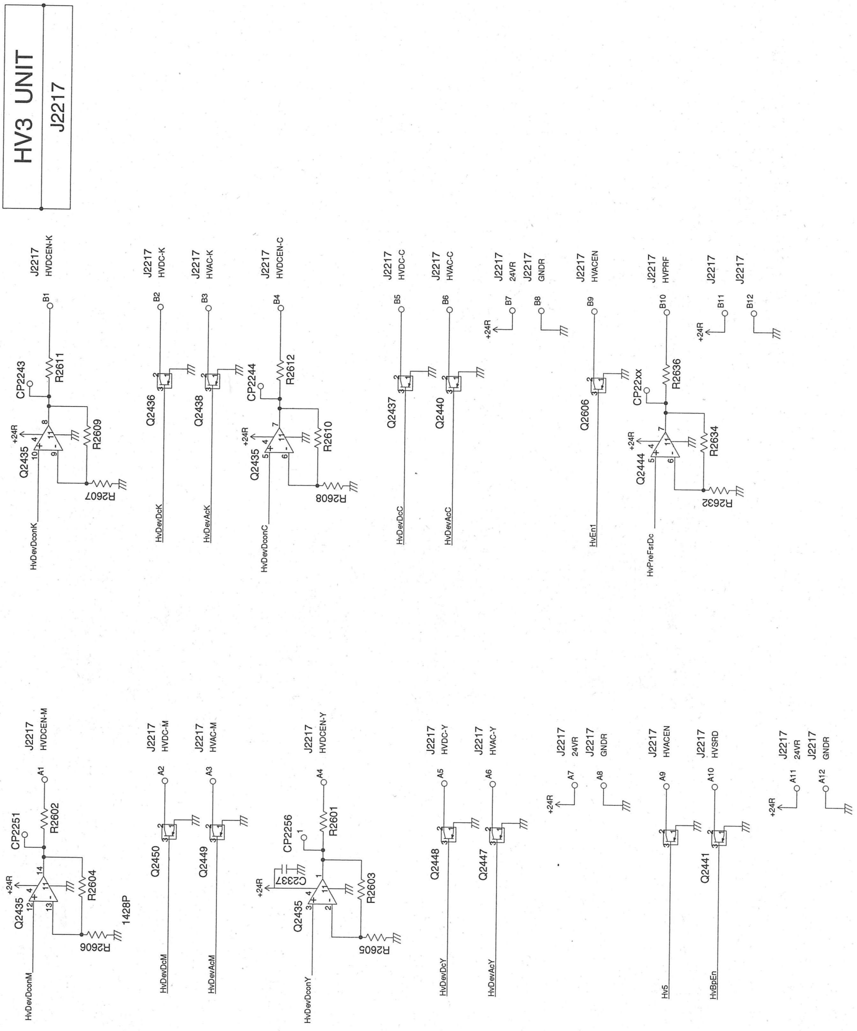
DC Controller Circuit Diagram (22/36)


PreFsr & PreMtray
J2214
B1 J2214
B2 J2214 PS8DT
B3 J2214
B4 J2214
B5 J2214 PS9DT
B6 J2214
B7 J2214
B8 J2214
+5V
+5U
R2383
R2380
R2377
R2376
Q2262
DA2233
DA2231
MtrayBeforSens1
MtrayBeforSens2
R2445
PreFsrFan
A1 J2214
A2 J2214 FM7D*
+24U
Q2608
R2857
PreFsrFanSpeed
A3 M11-A J2214
A5 M11-A* J2214
A4 +24U J2214
A7 +24U J2214
A6 M11-B J2214
A8 M11-B* J2214
C2202
R2206
C2248
R2388
C2250
Q2264
OUTA* VrefA INA* VSA RSA OUTB* TaB GND INB
TaA GND INA OUTA RSB VSB VrefB INB* OUTB*
R2381
R2387
C2266
C2249
R2420
R2205
R2386
R2384
PreFixMtrPls4
PreFixMtrPls1
PreFixMtrPls3
PreFixMtrPls2

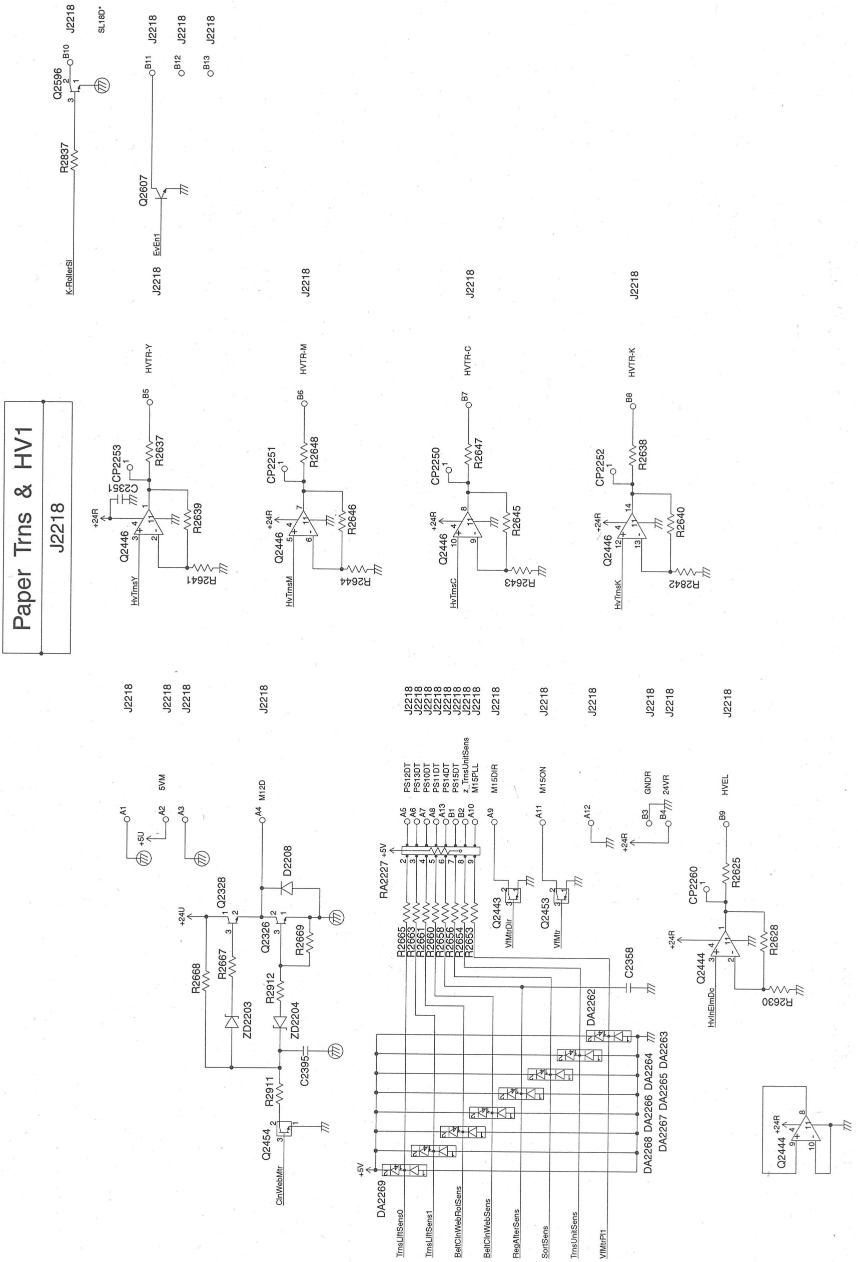
DC Controller Circuit Diagram (23/36)


HV2 & HV4 & PrimCornaFan
J2215
CP2220
J2215 HVPPRK
J2215 HVGRK
J2215 HVPRK
J2215
J2215
J2215
B8
B9
B10
B11
B12
B13
CP2209
CP2208
R2443
R2441
R2439
R2437
C2267
Q2414
Q2427
R2435
R2433
HvSubDcC
HvGridC
HvPrimC
+24R
J2215 HVSPEN*
J2215 HVSPAC
J2215 HVSPDC
J2215 FM8D*
J2215 FM9D*
J2215 HVPPRC
J2215 HVGRC
J2215 HVPRC
A9
A10
A11
A12
A13
B1
B2
B3
B4
B5
B6
B7
24VAN
CP2259
CP2211
CP2210
R2622
R2623
R2626
R2446
R2421
R2423
R2425
R2427
R2429
R2431
Q2605
Q2416
Q2444
Q2263
Q2414
Q2419
EvEn1
HvSortAc
HvSortDC
PrimCornaFan
HvSubDcK
HvGridK
HvPrimK
J2215 HVSUBM
J2215 HVGRM
J2215 HVPRM
J2215 HVSUBY
J2215 HVGRY
J2215 HVPRY
J2215 24VR
J2215 GNDR
A1
A2
A3
A4
A5
A6
A7
A8
CP2219
CP2218
CP2216
CP2215
R2422
R2424
R2444
R2442
R2426
R2428
R2440
R2438
C2268
R2430
R2432
R2436
R2434
Q2415
Q2418
Q2417
HvSubDcM
HvGridM
HvPrimM
HvSubDcY
HvGridY
HvPrimY

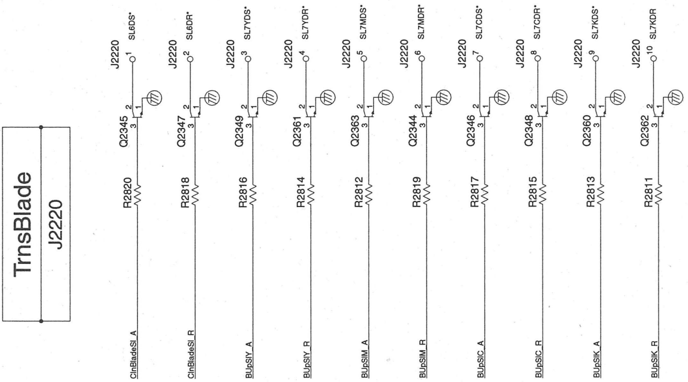
DC Controller Circuit Diagram (24/36)

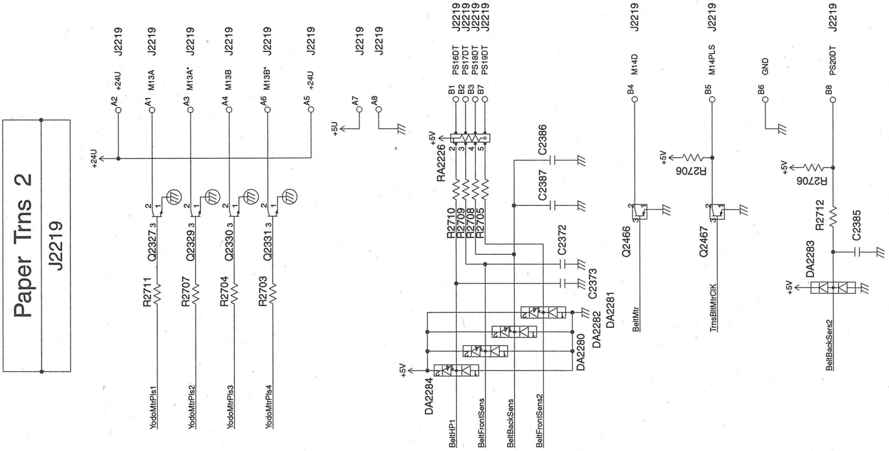

HV3 UNIT
J2217
J2217 HVDCEN-K
B1
R2611
CP2243
+24R
Q2435
R2609
R2607
HvDevDconK
J2217 HVDC-K
B2
Q2436
HvDevDcK
J2217 HVAC-K
B3
Q2438
HvDevAcK
J2217 HVDCEN-C
B4
R2612
CP2244
Q2435
R2610
R2608
HvDevDconC
J2217 HVDC-C
B5
Q2437
HvDevDcC
J2217 HVAC-C
B6
Q2440
HvDevAcC
J2217 24VR
B7
J2217 GNDR
B8
J2217 HVACEN
B9
Q2606
HvEn1
J2217 HVPRF
B10
CP22xx
R2636
Q2444
R2634
R2632
HvPreFsrDc
J2217
B11
J2217
B12
J2217 HVDCEN-M
A1
R2602
CP2251
Q2435
R2604
R2606
1428P
HvDevDconM
J2217 HVDC-M
A2
Q2450
HvDevDcM
J2217 HVAC-M
A3
Q2449
HvDevAcM
J2217 HVDCEN-Y
A4
R2601
CP2256
C2337
Q2435
R2603
R2605
HvDevDconY
J2217 HVDC-Y
A5
Q2448
HvDevDcY
J2217 HVAC-Y
A6
Q2447
HvDevAcY
J2217 24VR
A7
J2217 GNDR
A8
J2217 HVACEN
A9
Hv5
J2217 HVSRD
A10
Q2441
HvBpEn
J2217 24VR
A11
J2217 GNDR
A12

DC Controller Circuit Diagram (25/36)

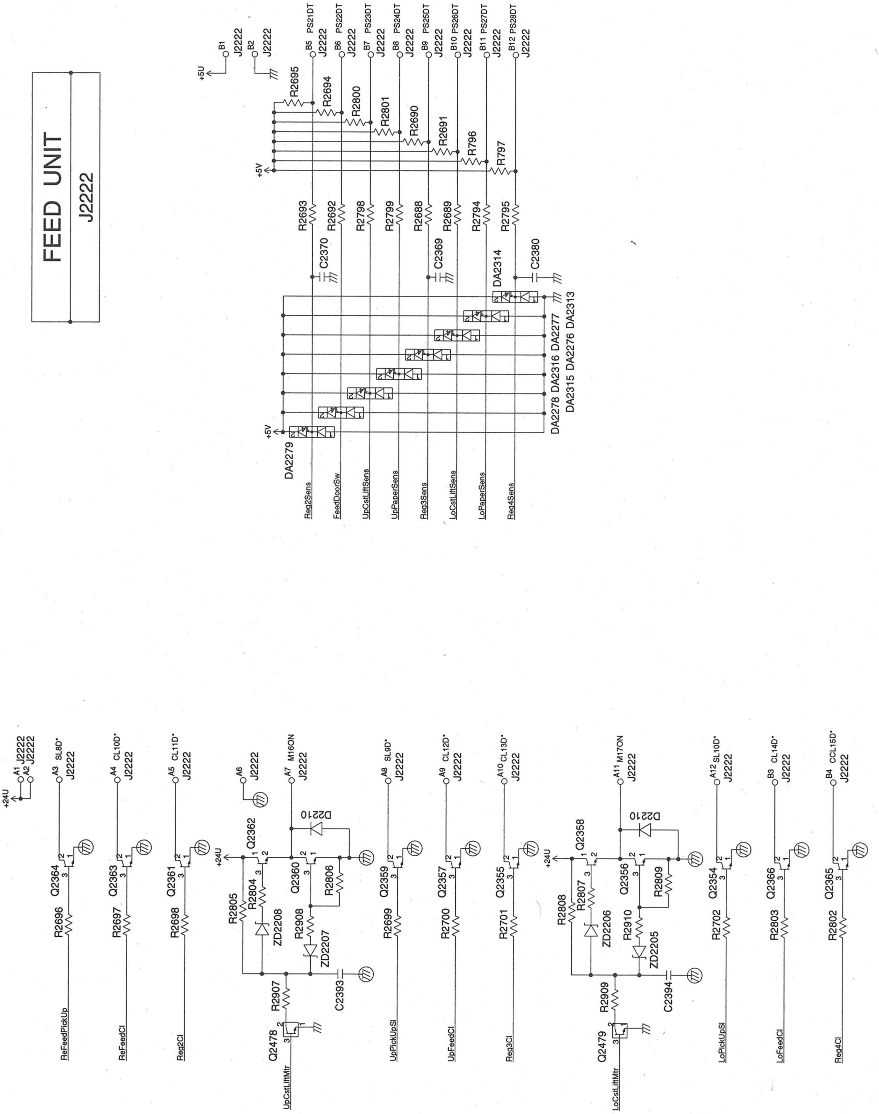

Paper Trns & HV1
J2218
K-RollerSl
R2837
Q2596
B10
SL18D*
EvEn1
Q2607
B11
B12
B13
HvTrnsY
Q2446
+24R
C2351
CP2253
R2637
R2639
R2641
B5
HVTR-Y
HvTrnsM
CP2251
R2648
R2646
R2644
B6
HVTR-M
HvTrnsC
CP2250
R2647
R2645
R2643
B7
HVTR-C
HvTrnsK
CP2252
R2638
R2640
R2642
B8
HVTR-K
A1
A2
A3
+5U
5VM
A4
M12D
+24U
Q2328
D2208
Q2326
R2669
R2668
R2667
R2912
ZD2203
ZD2204
C2395
R2911
Q2454
ClnWebMtr
RA2227
+5V
A5
A6
A7
A8
A13
B1
B2
A10
PS12DT
PS13DT
PS10DT
PS11DT
PS14DT
PS15DT
z_TrnsUnitSens
M15PLL
A9
M15DIR
Q2443
VfMtrDir
A11
M15ON
Q2453
VfMtr
A12
B3
GNDR
B4
24VR
+24R
R2665
R2663
R2661
R2660
R2658
R2656
R2654
R2653
C2358
DA2262
DA2263
DA2264
DA2265
DA2266
DA2267
DA2268
DA2269
TrnsLiftSens0
TrnsLiftSens1
BeltClnWebRotSens
BeltClnWebSens
RegAfterSens
SortSens
TrnsUnitSens
VfMtrPl1
B9
HVEL
CP2260
R2625
Q2444
R2628
R2630
HvInElmDc

DC Controller Circuit Diagram (26/36)

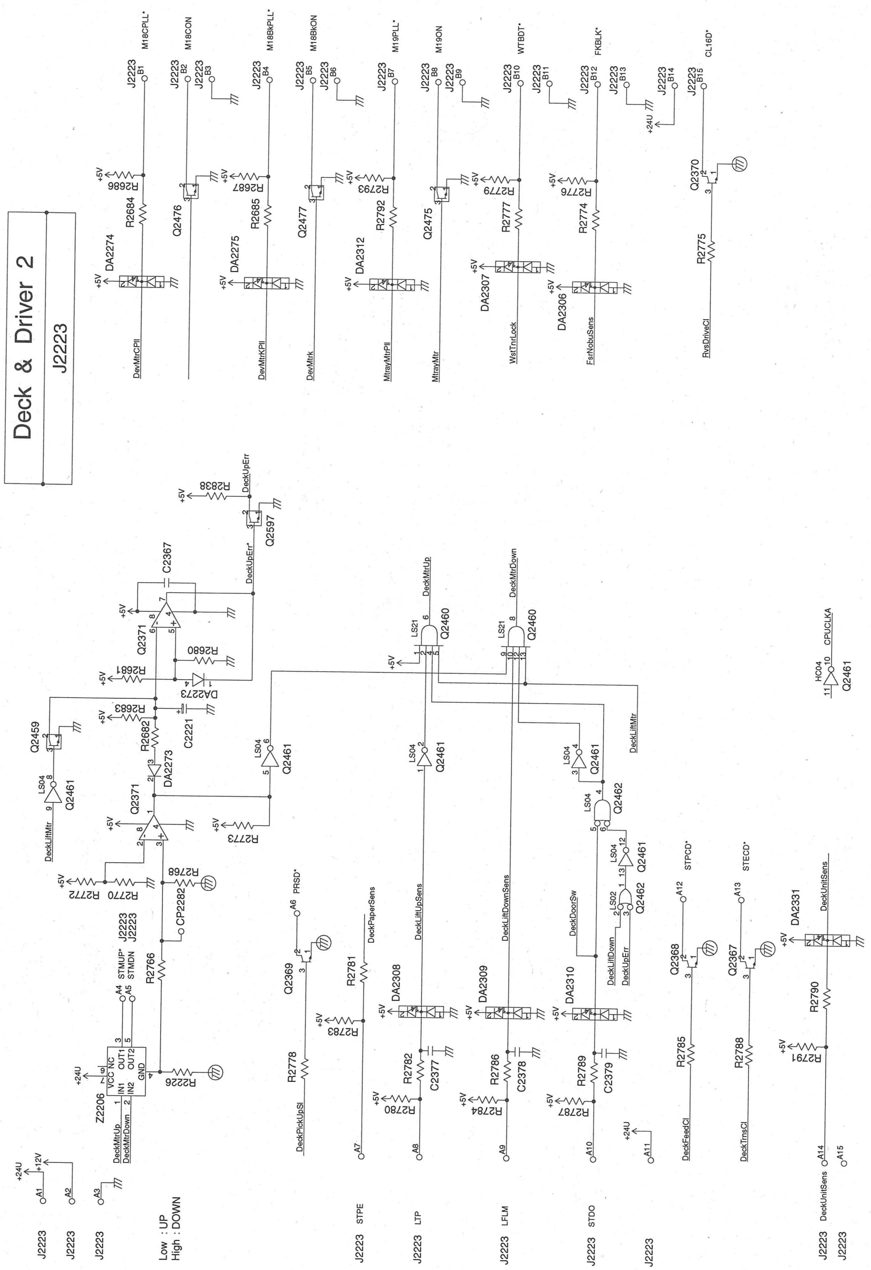

TrnsBlade
J2220
ClnBladeSl_A
R2820
Q2345
J2220 1 SL6DS*
ClnBladeSl_R
R2818
Q2347
J2220 2 SL6DR*
BUpSlY_A
R2816
Q2349
J2220 3 SL7YDS*
BUpSlY_R
R2814
Q2361
J2220 4 SL7YDR*
BUpSlM_A
R2812
Q2363
J2220 5 SL7MDS*
BUpSlM_R
R2819
Q2344
J2220 6 SL7MDR*
BUpSlC_A
R2817
Q2346
J2220 7 SL7CDS*
BUpSlC_R
R2815
Q2348
J2220 8 SL7CDR*
BUpSlK_A
R2813
Q2360
J2220 9 SL7KDS*
BUpSlK_R
R2811
Q2362
J2220 10 SL7KDR


Paper Trns 2
J2219
+24U
A2 +24U J2219
YodoMtrPls1
R2711
Q2327
A1 M13A J2219
YodoMtrPls2
R2707
Q2329
A3 M13A* J2219
YodoMtrPls3
R2704
Q2330
A4 M13B J2219
YodoMtrPls4
R2703
Q2331
A6 M13B* J2219
A5 +24U J2219
+5U
A7 J2219
A8 J2219
+5V
RA2226
B1 PS16DT J2219
B2 PS17DT J2219
B3 PS18DT J2219
B7 PS19DT J2219
R2710
R2709
R2708
R2705
C2386
C2387
C2372
C2373
DA2284
DA2280
DA2282
DA2281
BeltHP1
BeltFrontSens
BeltBackSens
BeltFrontSens2
Q2466
BeltMtr
B4 M14D J2219
+5V
R2706
Q2467
TrnsBltMtrClk
B5 M14PLS J2219
B6 GND
+5V
R2706
R2712
C2385
DA2283
BeltBackSers2
B8 PS20DT J2219

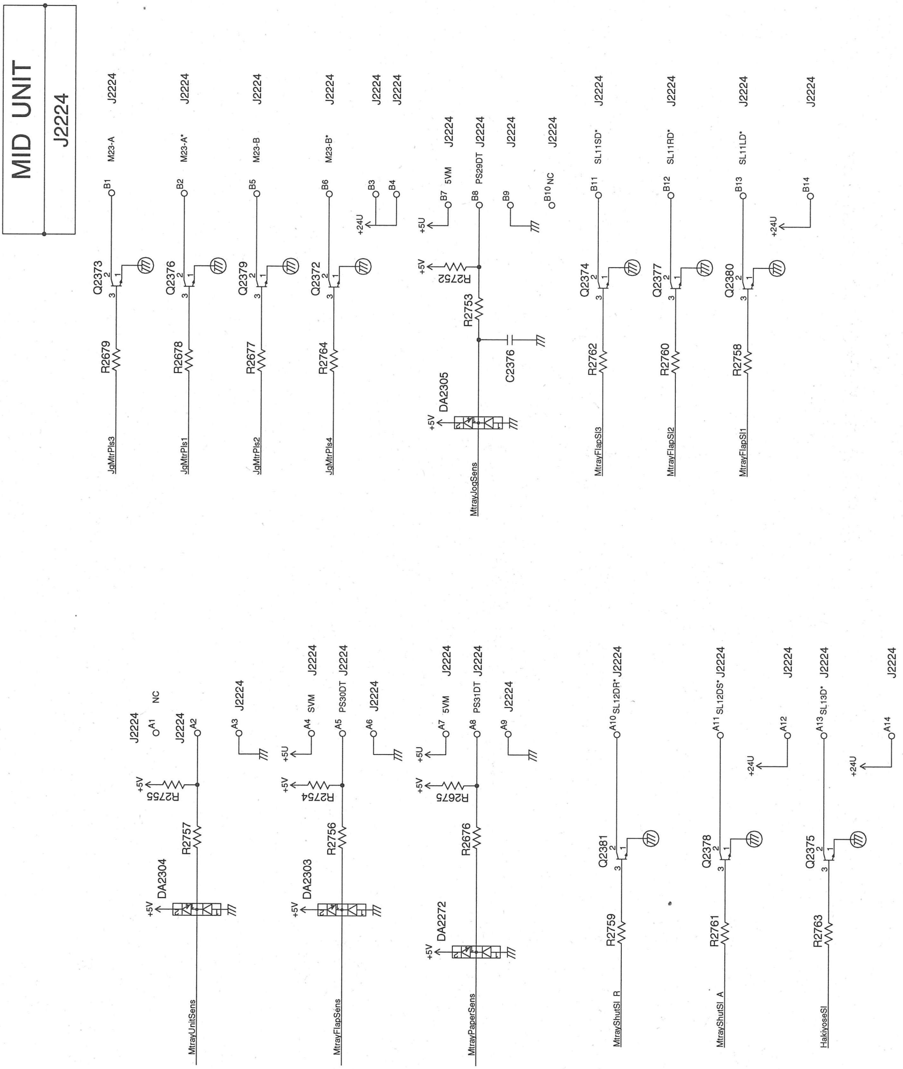
DC Controller Circuit Diagram (27/36)


FEED UNIT
J2222
+5U
B1 J2222
B2 J2222
B5 PS21DT J2222
B6 PS22DT J2222
B7 PS23DT J2222
B8 PS24DT J2222
B9 PS25DT J2222
B10 PS26DT J2222
B11 PS27DT J2222
B12 PS28DT J2222
+5V
R2695
R2694
R2800
R2801
R2690
R2691
R796
R797
R2693
R2692
R2798
R2799
R2688
R2689
R2794
R2795
C2370
C2369
C2380
DA2314
DA2279
DA2278 DA2316 DA2277 DA2313
DA2315 DA2276
Reg2Sens
FeedDoorSw
UpCstLiftSens
UpPaperSens
Reg3Sens
LoCstLiftSens
LoPaperSens
Reg4Sens
+24U
A1 J2222
A2 J2222
A3 SL8D* J2222
A4 CL10D* J2222
A5 CL11D* J2222
A6 J2222
A7 M16ON J2222
A8 SL9D* J2222
A9 CL12D* J2222
A10 CL13D* J2222
A11 M17ON J2222
A12 SL10D* J2222
B3 CL14D* J2222
B4 CCL15D* J2222
Q2364
Q2363
Q2361
Q2362
Q2360
Q2359
Q2357
Q2355
Q2358
Q2356
Q2354
Q2366
Q2365
Q2478
Q2479
R2696
R2697
R2698
R2805
R2804
R2908
R2806
R2907
R2699
R2700
R2701
R2808
R2807
R2910
R2809
R2909
R2702
R2803
R2802
D2210
ZD2208
ZD2207
ZD2206
ZD2205
C2393
C2394
ReFeedPickUp
ReFeedCl
Reg2Cl
UpCstLiftMtr
UpPickUpSl
UpFeedCl
Reg3Cl
LoCstLiftMtr
LoPickUpSl
LoFeedCl
Reg4Cl

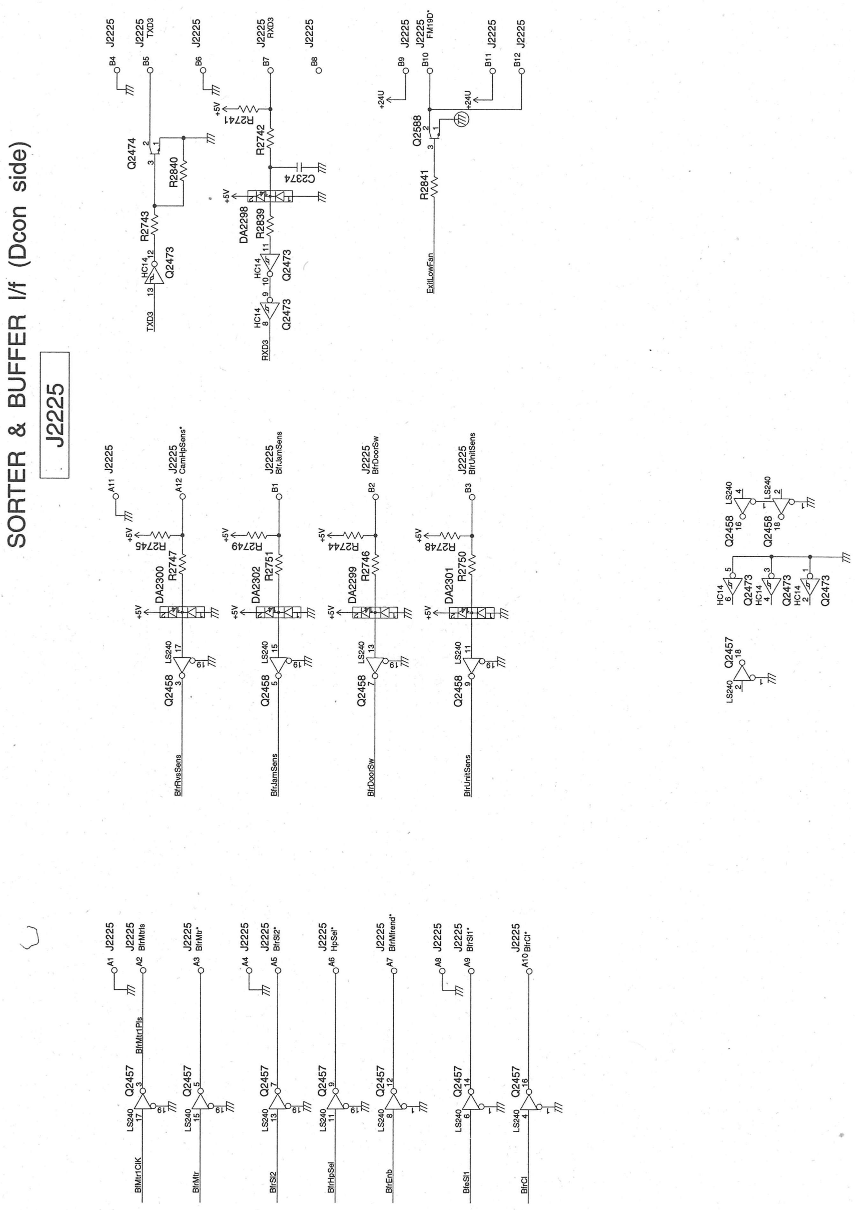
DC Controller Circuit Diagram (28/36)


Deck & Driver 2
J2223
M18CPLL*
M18CON
M18BkPLL*
M18BkON
M19PLL*
M19ON
WTBDT*
FKBLK*
CL16D*
DevMtrCPll
DevMtrKPll
DevMtrk
MtrayMtrPll
MtrayMtr
WstTnrLock
FsrNobuSens
RvsDriveCl
R2684
R2686
Q2476
R2685
R2687
Q2477
R2792
R2793
Q2475
R2777
R2779
R2774
R2776
R2775
Q2370
DA2274
DA2275
DA2312
DA2307
DA2306
+5V
+24U
+12V
DeckUpErr
DeckUpErr*
R2838
Q2597
C2367
Q2371
R2680
R2681
DA2273
R2683
R2682
C2221
Q2459
LS04
Q2461
DeckLiftMtr
R2773
R2772
R2770
R2768
CP2282
STMUP*
STMDN
R2766
Z2206
VCC NC
IN1 OUT1
IN2 OUT2
GND
R2226
DeckMtrUp
DeckMtrDown
LS21
Q2460
LS02
Q2462
HC04
CPUCLKA
PRSD*
Q2369
DeckPaperSens
R2781
R2783
R2778
DeckPickUpSl
DeckLiftUpSens
DA2308
R2782
C2377
R2780
DeckLiftDownSens
DA2309
R2786
C2378
R2784
DeckDoorSw
DeckLiftDown
DA2310
R2789
C2379
R2787
STPCD*
Q2368
R2785
DeckFeedCl
STECD*
Q2367
R2788
DeckTrnsCl
DA2331
DeckUnitSens
R2790
R2791
A1 A2 A3 A4 A5 A6 A7 A8 A9 A10 A11 A12 A13 A14 A15
B1 B2 B3 B4 B5 B6 B7 B8 B9 B10 B11 B12 B13 B14 B15
Low : UP
High : DOWN
STPE
LTP
LFLM
STDO
DeckUnitSens

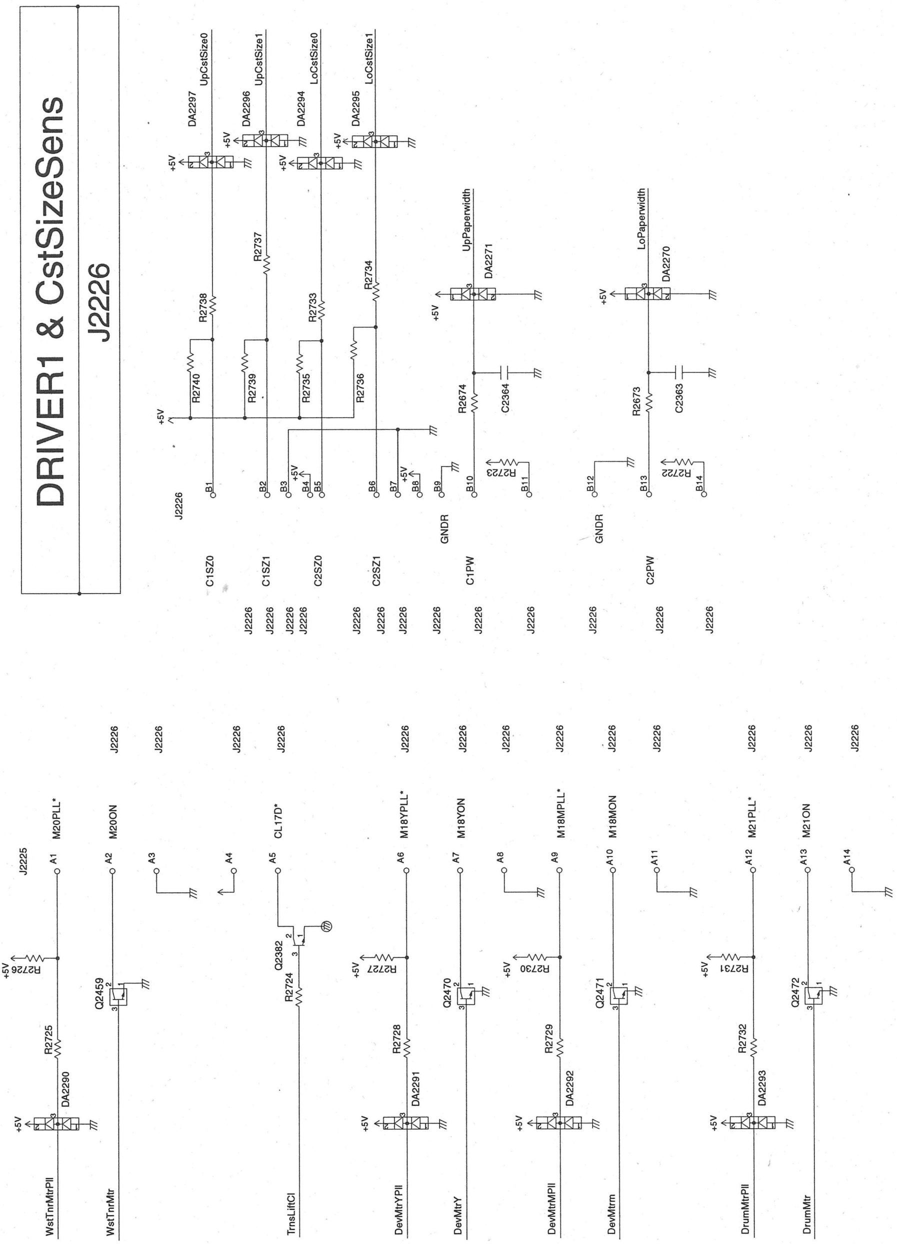
DC Controller Circuit Diagram (29/36)


MID UNIT
J2224
JgMtrPls3
R2679
Q2373
B1
M23-A
JgMtrPls1
R2678
Q2376
B2
M23-A*
JgMtrPls2
R2677
Q2379
B5
M23-B
JgMtrPls4
R2764
Q2372
B6
M23-B*
B3
B4
+24U
+5U
B7
5VM
MtrayJogSens
DA2305
+5V
C2376
R2753
R2752
B8
PS29DT
B9
B10
NC
MtrayFlapSl3
R2762
Q2374
B11
SL11SD*
MtrayFlapSl2
R2760
Q2377
B12
SL11RD*
MtrayFlapSl1
R2758
Q2380
B13
SL11LD*
B14
MtrayUnitSens
DA2304
R2757
R2755
A1
A2
A3
MtrayFlapSens
DA2303
R2756
R2754
A4
SVM
A5
PS30DT
A6
MtrayPaperSens
DA2272
R2676
R2675
A7
A8
PS31DT
A9
MtrayShutSl_R
R2759
Q2381
A10
SL12DR*
MtrayShutSl_A
R2761
Q2378
A11
SL12DS*
A12
HakiyoseSl
R2763
Q2375
A13
SL13D*
A14
1
2
3

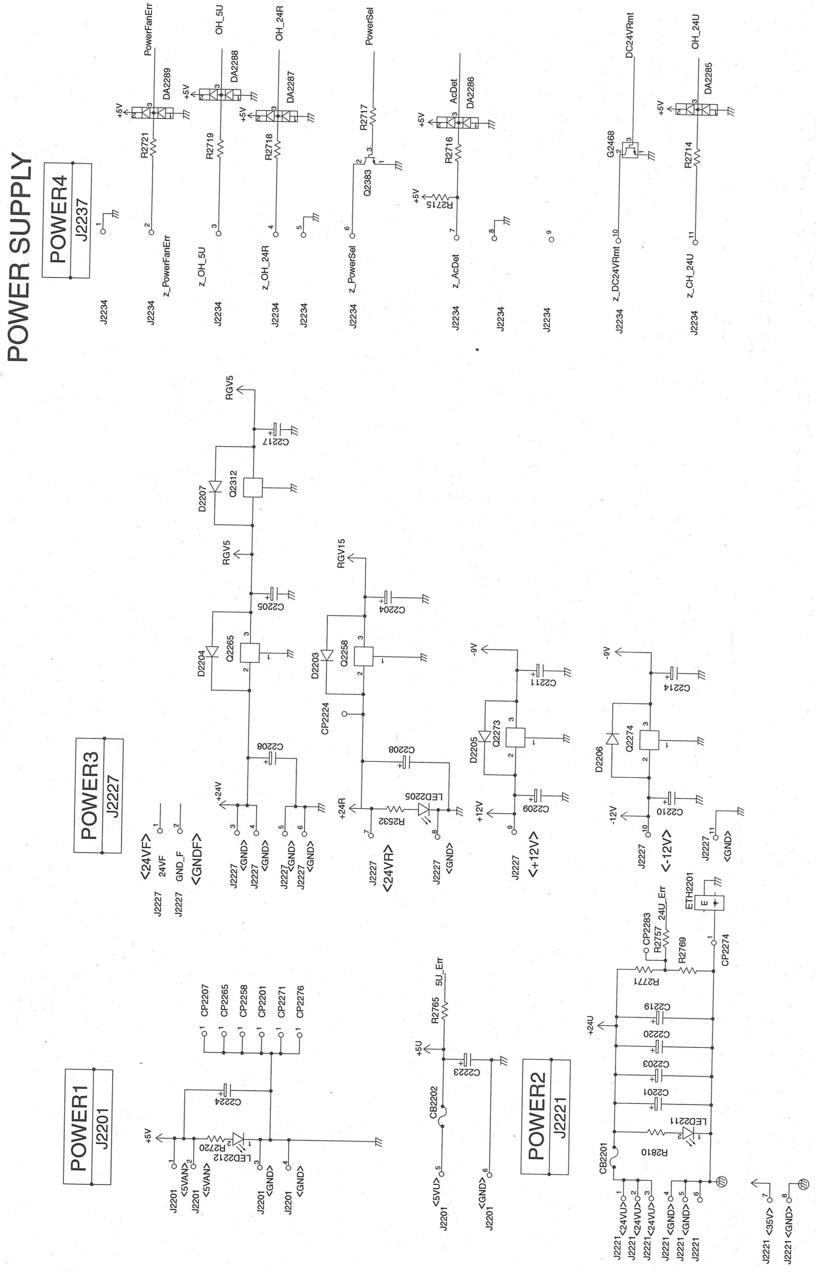
DC Controller Circuit Diagram (30/36)


SORTER & BUFFER I/f (Dcon side)
J2225
B4 J2225
B5 J2225 TXD3
B6 J2225
B7 J2225 RXD3
B8 J2225
B9 J2225
B10 J2225 FM19D*
B11 J2225
B12 J2225
Q2474
R2840
R2743
HC14
Q2473
TXD3
+5V
R2741
R2742
C2374
DA2298
R2839
RXD3
+24U
Q2588
R2841
ExitLowFan
A11 J2225
A12 J2225 CamHpSens*
B1 J2225 BfrJamSens
B2 J2225 BfrDoorSw
B3 J2225 BfrUnitSens
R2745
R2747
DA2300
R2749
R2751
DA2302
R2744
R2746
DA2299
R2748
R2750
DA2301
LS240
Q2458
BfrRvsSens
BfrJamSens
BfrDoorSw
BfrUnitSens
Q2457
A1 J2225
A2 J2225 BfrMtrls
A3 J2225 BfrMtr*
A4 J2225
A5 J2225 BfrSl2*
A6 J2225 HpSel*
A7 J2225 BfrMfrend*
A8 J2225
A9 J2225 BfrSl1*
A10 J2225 BfrCl*
BfrMtr1Pls
BfMtr1ClK
BfrMtr
BfrSl2
BfrHpSel
BfrEnb
BfeSl1
BfrCl

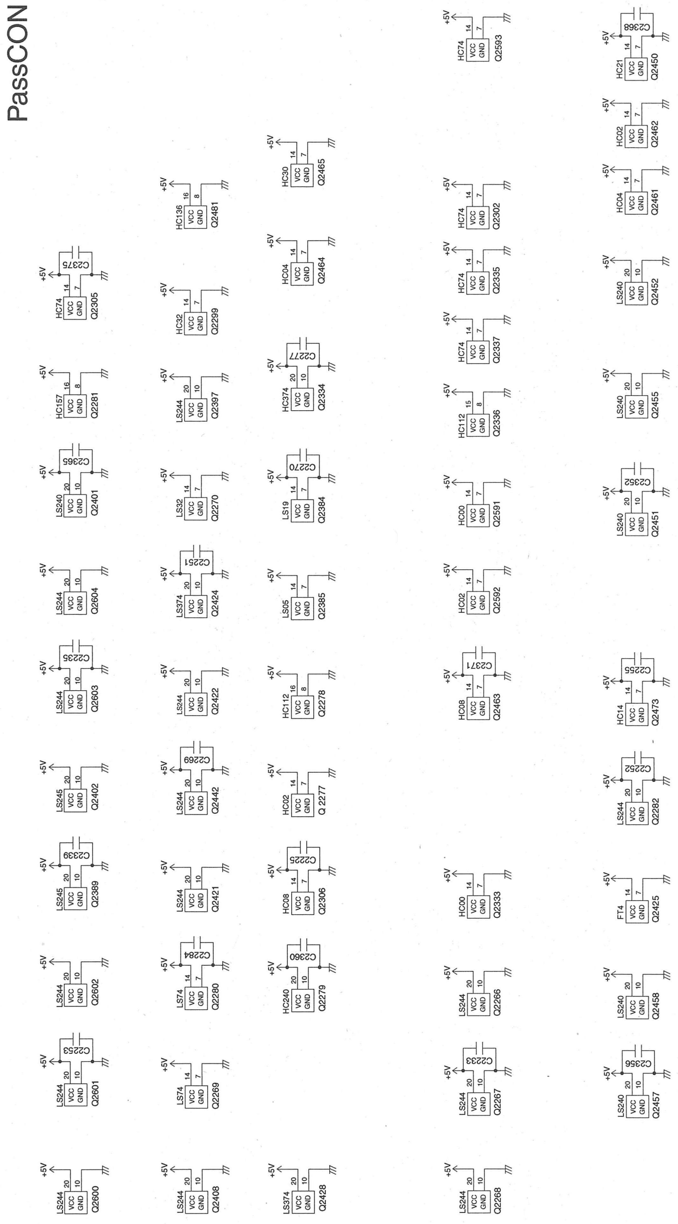
DC Controller Circuit Diagram (31/36)


DRIVER1 & CstSizeSens
J2226
UpCstSize0
UpCstSize1
LoCstSize0
LoCstSize1
DA2297
DA2296
DA2294
DA2295
+5V
R2738
R2737
R2733
R2734
R2740
R2739
R2735
R2736
UpPaperwidth
DA2271
R2674
C2364
LoPaperwidth
DA2270
R2673
C2363
B1
B2
B3
B4
B5
B6
B7
B8
B9
B10
B11
B12
B13
B14
R2723
R2722
GNDR
C1SZ0
C1SZ1
C2SZ0
C2SZ1
C1PW
C2PW
J2225
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10
A11
A12
A13
A14
M20PLL*
M20ON
CL17D*
M18YPLL*
M18YON
M18MPLL*
M18MON
M21PLL*
M21ON
R2726
R2725
DA2290
Q2459
Q2382
R2724
R2727
R2728
DA2291
Q2470
R2730
R2729
DA2292
Q2471
R2731
R2732
DA2293
Q2472
WstTnrMtrPll
WstTnrMtr
TrnsLiftCl
DevMtrYPll
DevMtrY
DevMtrMPll
DevMtrm
DrumMtrPll
DrumMtr

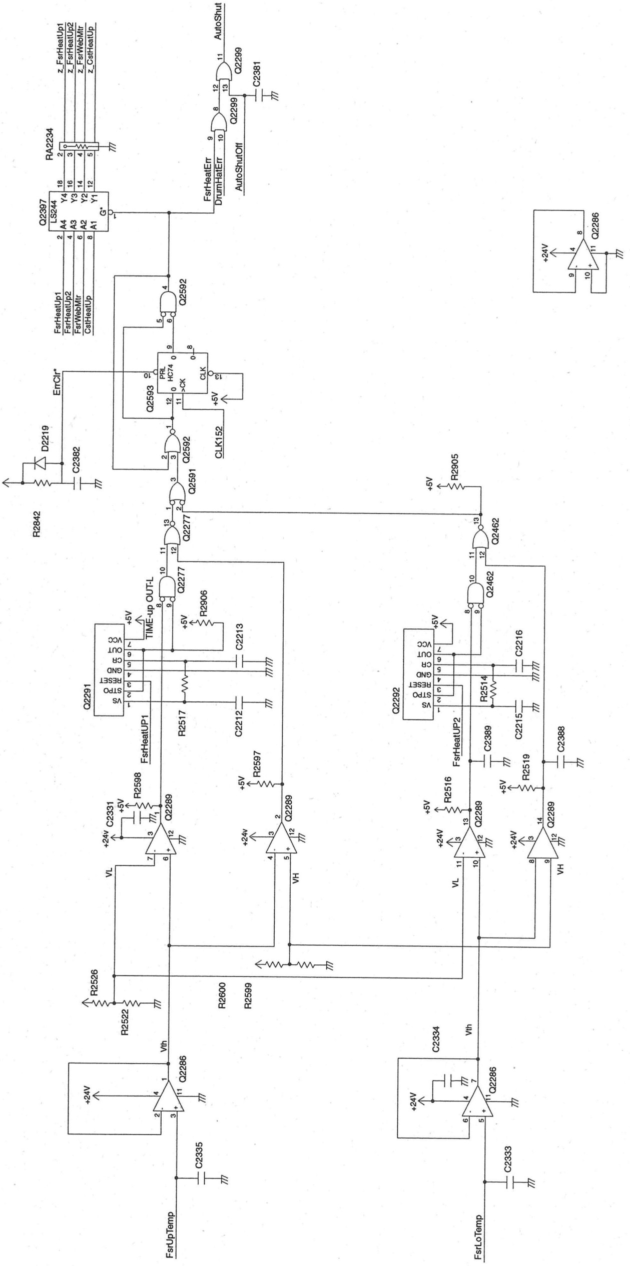
DC Controller Circuit Diagram (32/36)


POWER SUPPLY
POWER4
J2237
J2234
z_PowerFanErr
PowerFanErr
z_OH_5U
OH_5U
z_OH_24R
OH_24R
z_PowerSel
PowerSel
z_AcDet
AcDet
z_DC24VRmt
DC24VRmt
z_CH_24U
OH_24U
R2721
R2719
R2718
R2717
R2716
R2715
R2714
DA2289
DA2288
DA2287
DA2286
DA2285
Q2383
G2468
+5V
POWER3
J2227
<24VF>
24VF
GND_F
<GNDF>
<GND>
<24VR>
<+12V>
<-12V>
+24V
+24R
+12V
-12V
-9V
RGV5
RGV15
C2217
C2205
C2204
C2208
C2211
C2214
C2209
C2210
Q2312
Q2265
Q2258
Q2273
Q2274
D2207
D2204
D2203
D2205
D2206
CP2224
LED2205
R2532
POWER1
J2201
<5VAN>
+5V
R2720
LED2212
C2224
CP2207
CP2265
CP2258
CP2201
CP2271
CP2276
<5VU>
CB2202
+5U
C2223
R2765
5U_Err
POWER2
J2221
<24VU>
<35V>
CB2201
R2810
LED2211
C2201
C2203
C2220
C2219
+24U
R2771
R2769
R2757
24U_Err
CP2283
ETH2201
E
CP2274

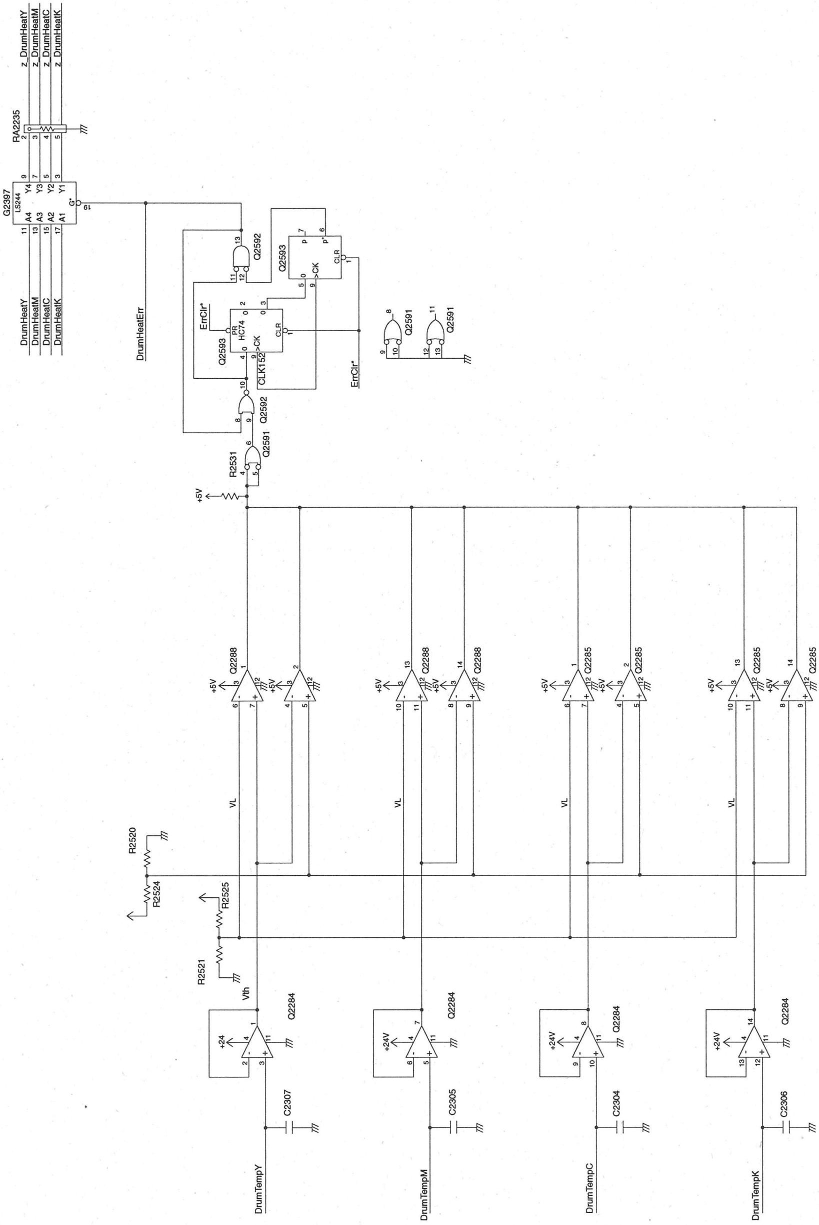
DC Controller Circuit Diagram (33/36)


PassCON
+5V
VCC
GND
HC74 Q2305 C2375
HC157 Q2281
LS240 Q2401 C2365
LS244 Q2604
LS244 Q2603 C2235
LS245 Q2402
LS245 Q2389 C2339
LS244 Q2602
LS244 Q2601 C2253
LS244 Q2600
HC136 Q2481
HC32 Q2299
LS244 Q2397
LS32 Q2270
LS374 Q2424 C2251
LS244 Q2422
LS244 Q2442 C2269
LS244 Q2421
LS74 Q2280 C2284
LS74 Q2269
LS244 Q2408
HC30 Q2465
HC04 Q2464
HC374 Q2334 C2277
LS19 Q2384 C2270
LS05 Q2385
HC112 Q2278
HC02 Q 2277
HC08 Q2306 C2225
HC240 Q2279 C2360
LS374 Q2428
HC74 Q2593
HC74 Q2302
HC74 Q2335
HC74 Q2337
HC112 Q2336
HC00 Q2591
HC02 Q2592
HC08 Q2463 C2371
HC00 Q2333
LS244 Q2266
LS244 Q2267 C2233
LS244 Q2268
HC21 Q2450 C2368
HC02 Q2462
HC04 Q2461
LS240 Q2452
LS240 Q2455
LS240 Q2451 C2352
HC14 Q2473 C2255
LS244 Q2282 C2252
FT4 Q2425
LS240 Q2458
LS240 Q2457 C2356

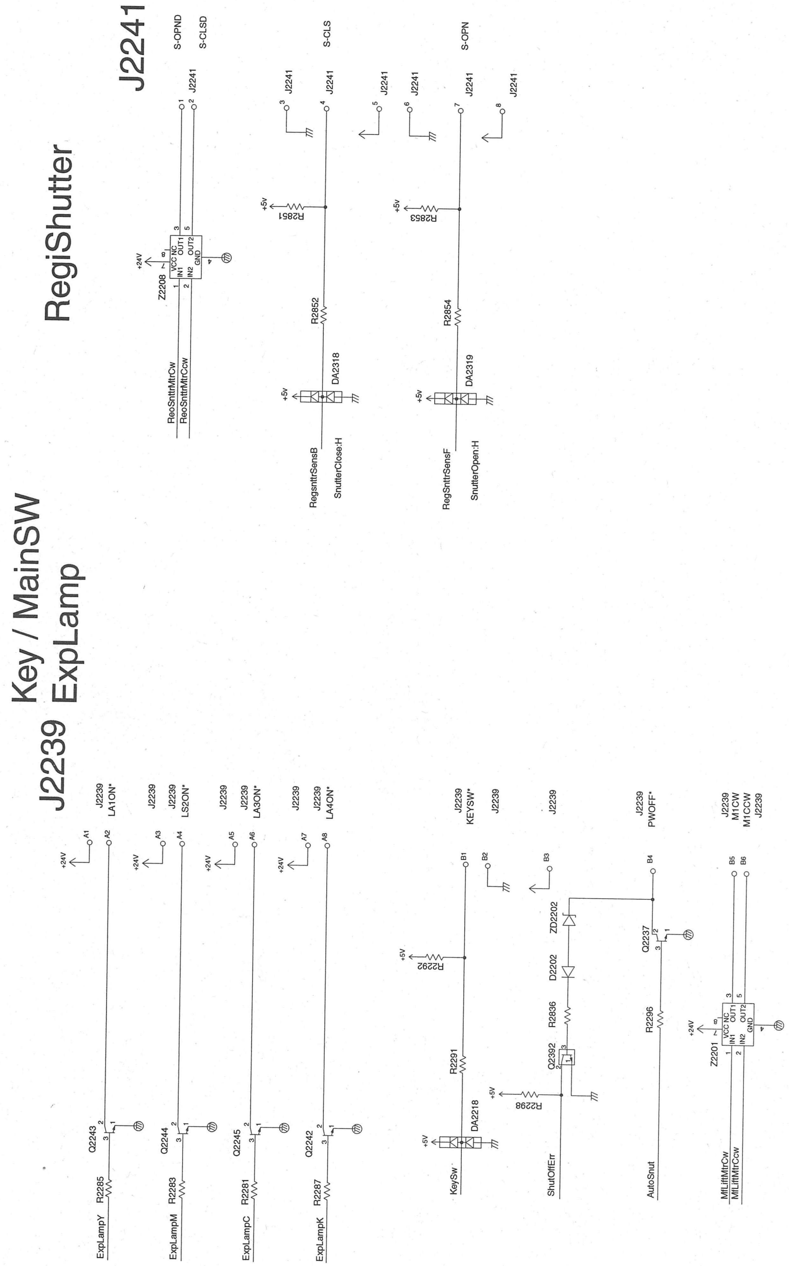
DC Controller Circuit Diagram (34/36)


AutoShut
Q2299
C2381
z_FsrHeatUp1
z_FsrHeatUp2
z_FsrWebMtr
z_CstHeatUp
RA2234
Q2397
LS244
A4 A3 A2 A1 G*
Y4 Y3 Y2 Y1
FsrHeatErr
DrumHatErr
AutoShutOff
FsrHeatUp1
FsrHeatUp2
FsrWebMtr
CstHeatUp
Q2592
ErrClr*
PRL
HC74
>CK
CLK
Q2593
+5V
CLK152
D2219
C2382
R2842
Q2591
R2905
Q2277
Q2462
TIME-up OUT-L
R2906
C2213
C2212
R2517
Q2291
VCC
OUT
CR
GND
RESET
STPO
VS
FsrHeatUP1
C2216
C2215
R2514
Q2292
FsrHeatUP2
C2389
C2388
R2519
R2516
R2597
R2598
C2331
Q2289
+24V
VL
VH
R2526
R2522
R2600
R2599
Vth
C2334
Q2286
C2335
C2333
FsrUpTemp
FsrLoTemp

DC Controller Circuit Diagram (35/36)

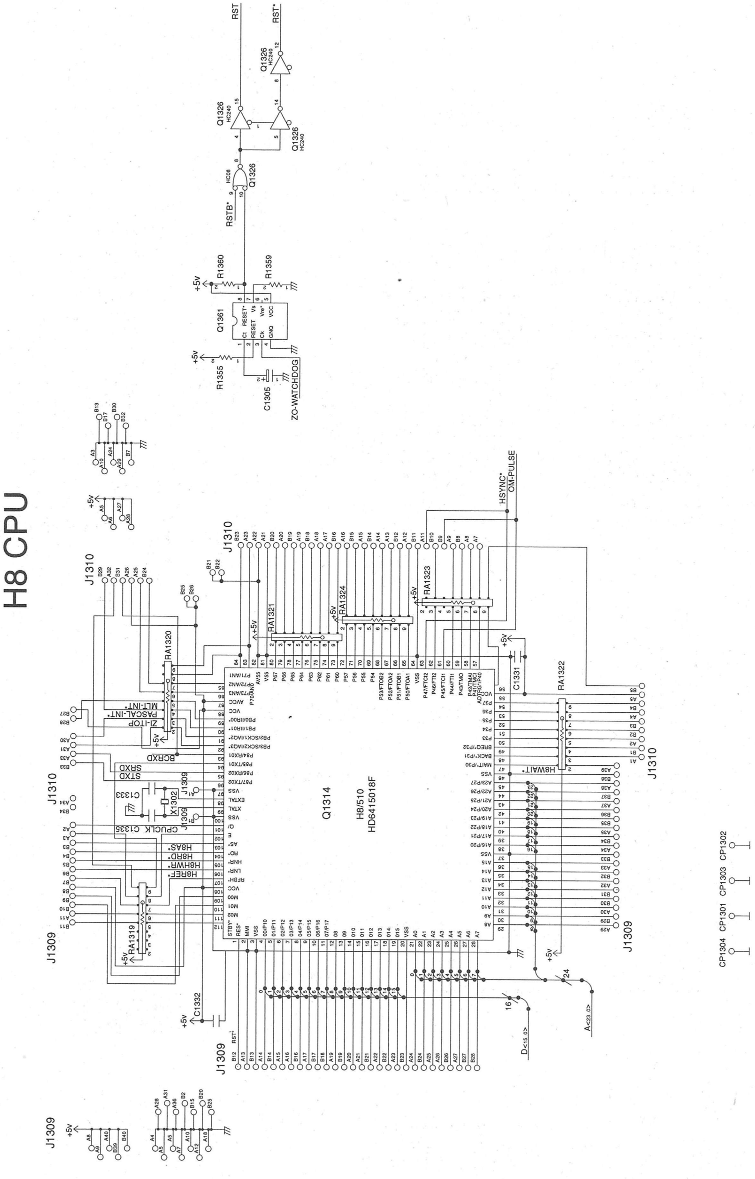

z_DrumHeatY
z_DrumHeatM
z_DrumHeatC
z_DrumHeatK
RA2235
G2397
LS244
G*
DrumHeatY
DrumHeatM
DrumHeatC
DrumHeatK
DrumHeatErr
Q2592
Q2593
ErrClr*
PR
HC74
>CK
CLR
CLK152
Q2591
R2531
+5V
Q2288
Q2285
VL
R2520
R2524
R2525
R2521
Vth
Q2284
+24V
C2307
C2305
C2304
C2306
DrumTempY
DrumTempM
DrumTempC
DrumTempK

DC Controller Circuit Diagram (36/36)

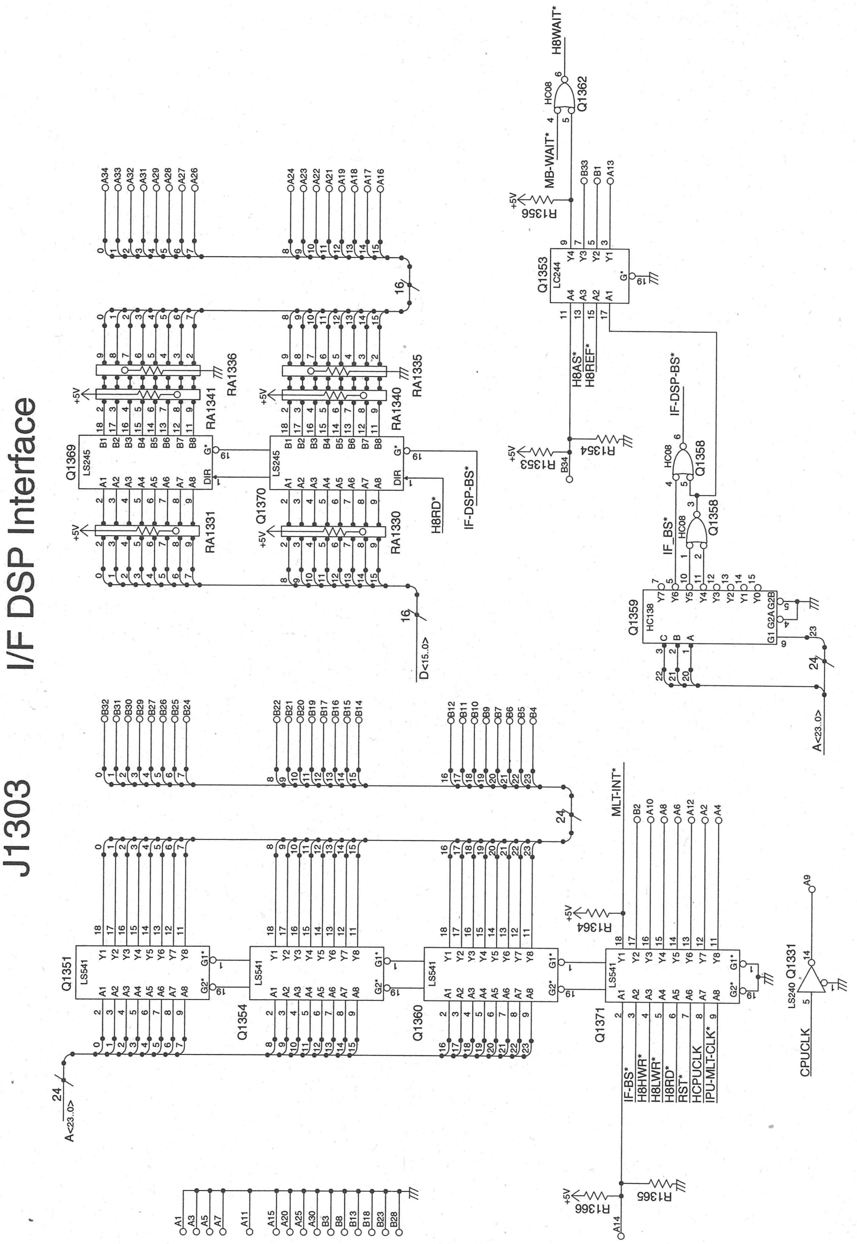

RegiShutter
J2241
S-OPND
S-CLSD
S-CLS
S-OPN
J2241
Z2208
+24V
VCC NC
IN1 OUT1
IN2 OUT2
GND
ReoSnttrMtrCw
ReoSnttrMtrCcw
R2851
R2852
R2853
R2854
+5V
DA2318
DA2319
RegsnttrSensB
SnutterClose:H
RegSnttrSensF
SnutterOpen:H
Key / MainSW
ExpLamp
J2239
LA1ON*
LS2ON*
LA3ON*
LA4ON*
KEYSW*
PWOFF*
M1CW
M1CCW
A1
A2
A3
A4
A5
A6
A7
A8
B1
B2
B3
B4
B5
B6
B7
B8
Q2243
Q2244
Q2245
Q2242
R2285
R2283
R2281
R2287
ExpLampY
ExpLampM
ExpLampC
ExpLampK
R2292
R2291
DA2218
KeySw
ZD2202
D2202
R2836
Q2392
R2298
ShutOffErr
Q2237
R2296
AutoSnut
Z2201
MtLiftMtrCw
MtLiftMtrCcw

E. READER CONTROLLER CIRCUIT DIAGRAM

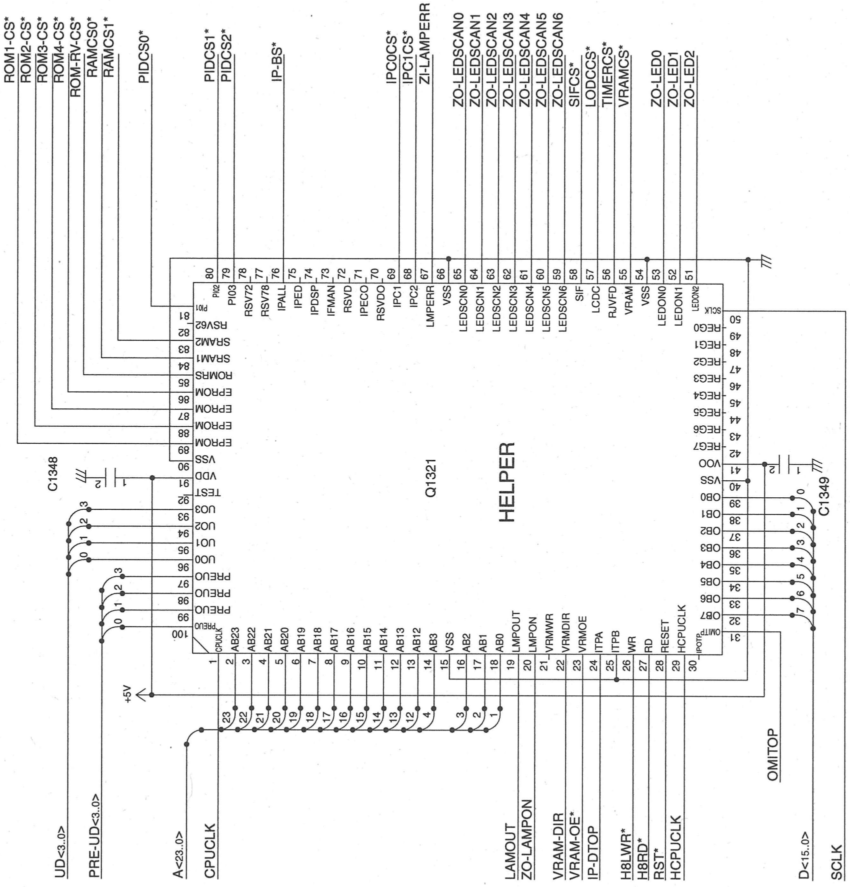
Reader Controller Circuit Diagram (1/15)


H8 CPU
Q1314
H8/510
HD6415018F
RST
RST*
RSTB*
Q1326
HC240
HC08
Q1361
R1360
R1359
R1355
C1305
ZO-WATCHDOG
+5v
J1309
J1310
RA1319
RA1320
RA1321
RA1322
RA1323
RA1324
C1331
C1332
C1333
C1335
X1302
HSYNC*
OM-PULSE
H8WAIT*
MLT-INT*
PASCAL-INT*
ZI-ITOP
BCRXD
SRXD
STXD
CPUCLK
H8AS*
H8RD*
H8HWR*
H8REF*
D<15..0>
A<23..0>
CP1304
CP1301
CP1303
CP1302

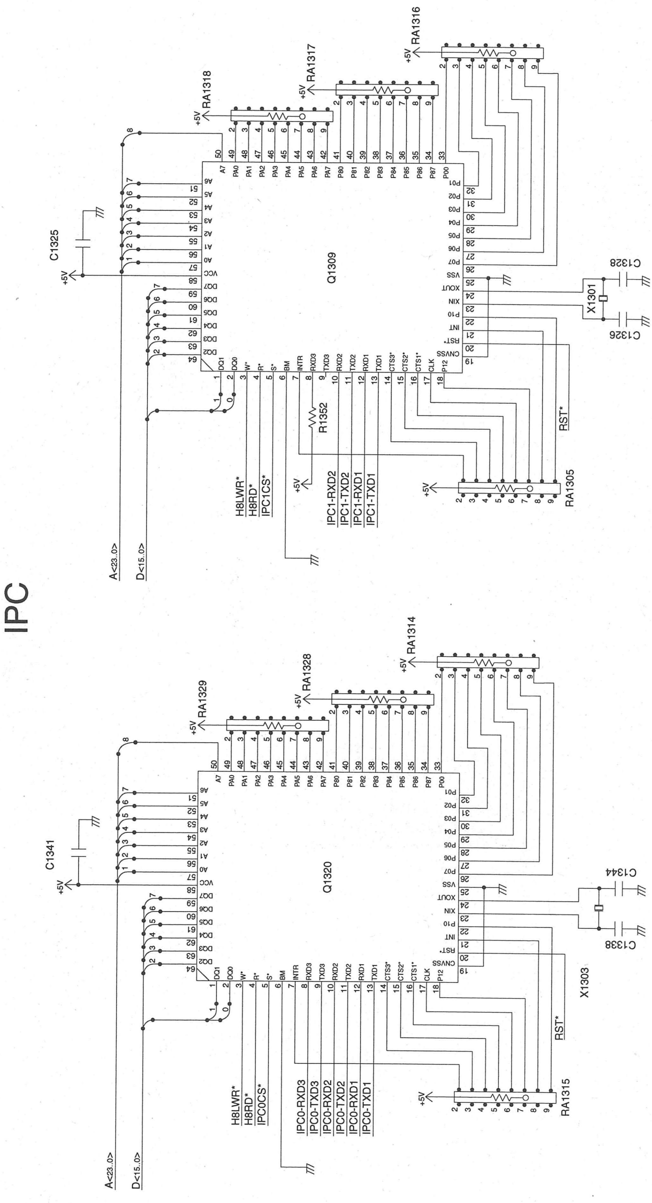
Reader Controller Circuit Diagram (2/15)


J1303
I/F DSP Interface
Q1351
Q1354
Q1360
Q1371
Q1369
Q1370
Q1353
Q1359
Q1358
Q1362
Q1331
LS541
LS245
LC244
HC138
HC08
LS240
RA1341
RA1336
RA1340
RA1335
RA1331
RA1330
R1356
R1353
R1354
R1364
R1366
R1365
A<23..0>
D<15..0>
H8WAIT*
MB-WAIT*
H8AS*
H8REF*
IF-DSP-BS*
IF_BS*
H8RD*
MLT-INT*
IF-BS*
H8HWR*
H8LWR*
RST*
HCPUCLK
IPU-MLT-CLK*
CPUCLK
+5V

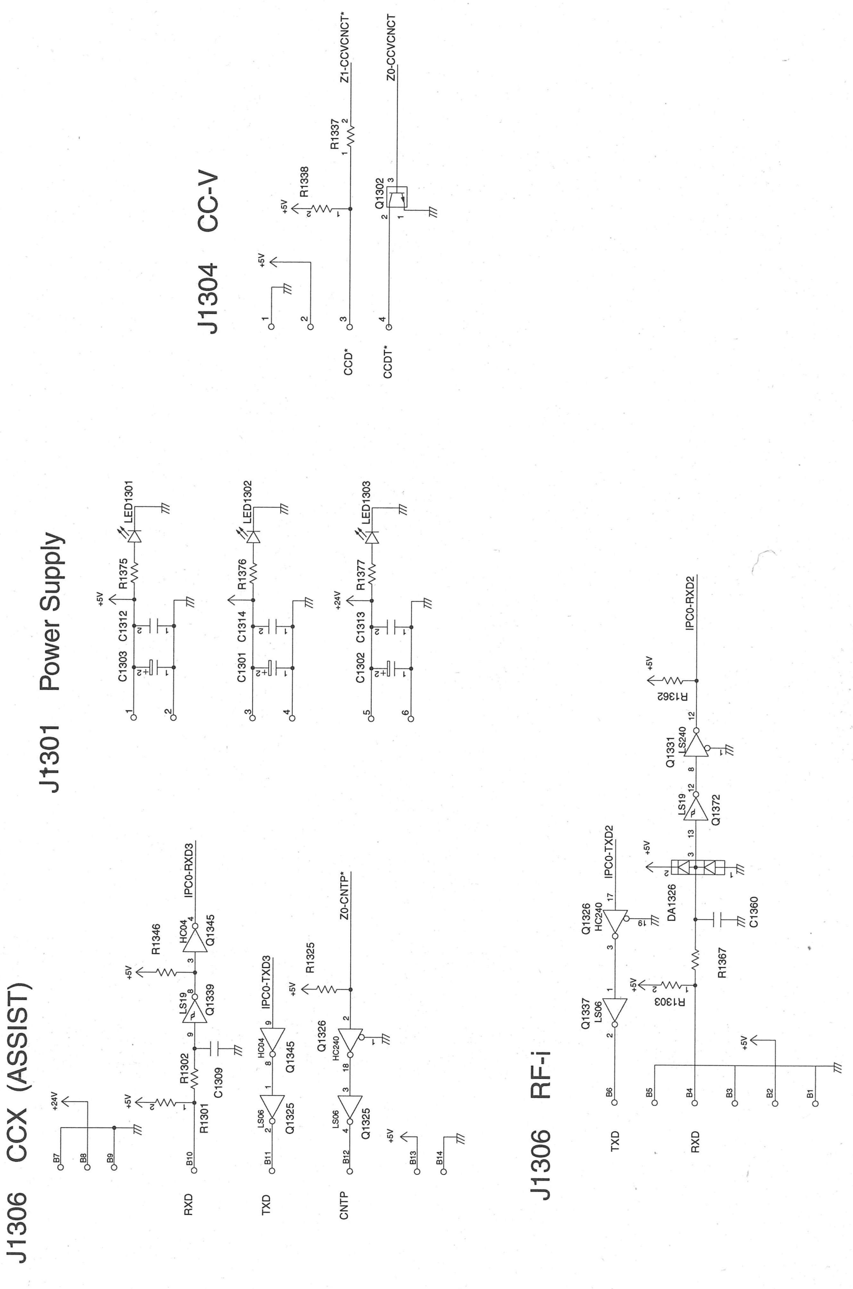
Reader Controller Circuit Diagram (3/15)


ROM1-CS*
ROM2-CS*
ROM3-CS*
ROM4-CS*
ROM-RV-CS*
RAMCS0*
RAMCS1*
PIDCS0*
PIDCS1*
PIDCS2*
IP-BS*
IPC0CS*
IPC1CS*
ZI-LAMPERR
ZO-LEDSCAN0
ZO-LEDSCAN1
ZO-LEDSCAN2
ZO-LEDSCAN3
ZO-LEDSCAN4
ZO-LEDSCAN5
ZO-LEDSCAN6
SIFCS*
LODCCS*
TIMERCS*
VRAMCS*
ZO-LED0
ZO-LED1
ZO-LED2
Q1321
HELPER
C1348
C1349
+5V
UD<3..0>
PRE-UD<3..0>
A<23..0>
CPUCLK
LAMOUT
ZO-LAMPON
VRAM-DIR
VRAM-OE*
IP-DTOP
H8LWR*
H8RD*
RST*
HCPUCLK
OMITOP
D<15..0>
SCLK
CPUCLK AB23 AB22 AB21 AB20 AB19 AB18 AB17 AB16 AB15 AB14 AB13 AB12 AB3 VSS AB2 AB1 AB0 LMPOUT LMPON VRMWR VRMDIR VRMOE ITPA ITPB WR RD RESET HCPUCLK IPOTP
OMITP OB7 OB6 OB5 OB4 OB3 OB2 OB1 OB0 VSS VOO REG7 REG6 REG5 REG4 REG3 REG2 REG1 REG0 SCLK
LEDON2 LEDON1 LEDON0 VSS VRAM RJVFD LCDC SIF LEDSCN6 LEDSCN5 LEDSCN4 LEDSCN3 LEDSCN2 LEDSCN1 LEDSCN0 VSS LMPERR IPC2 IPC1 RSVDO IPECO RSVD IFMAN IPDSP IPED IPALL RSV78 RSV72 PI03 PI02
PI01 RSV62 SRAM2 SRAM1 ROMRS EPROM EPROM EPROM EPROM VSS VDD TEST UO3 UO2 UO1 UO0 PREUO PREUO PREUO PREUO

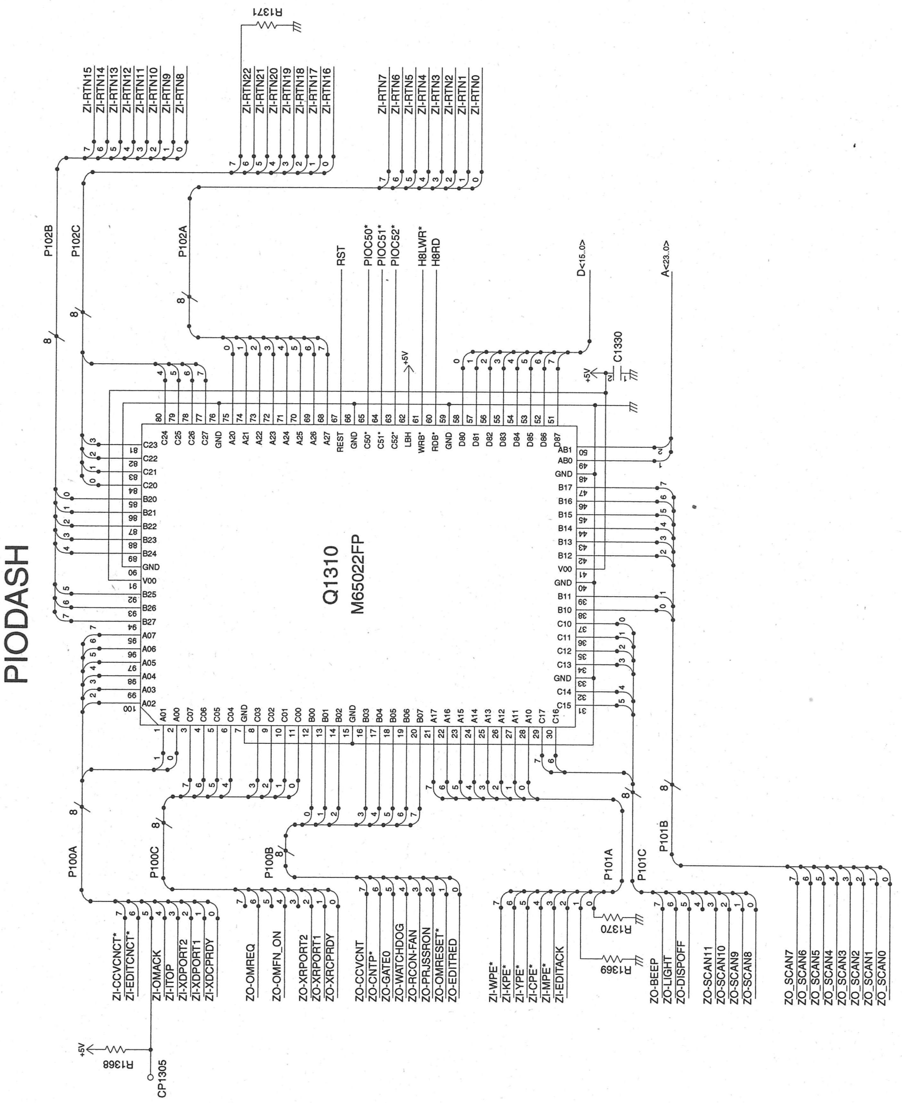
Reader Controller Circuit Diagram (4/15)


IPC
Q1309
Q1320
RA1318
RA1317
RA1316
RA1305
RA1329
RA1328
RA1314
RA1315
C1325
C1341
C1328
C1326
C1344
C1338
X1301
X1303
R1352
+5V
A<23..0>
D<15..0>
H8LWR*
H8RD*
IPC1CS*
IPC1-RXD2
IPC1-TXD2
IPC1-RXD1
IPC1-TXD1
IPC0CS*
IPC0-RXD3
IPC0-TXD3
IPC0-RXD2
IPC0-TXD2
IPC0-RXD1
IPC0-TXD1
RST*

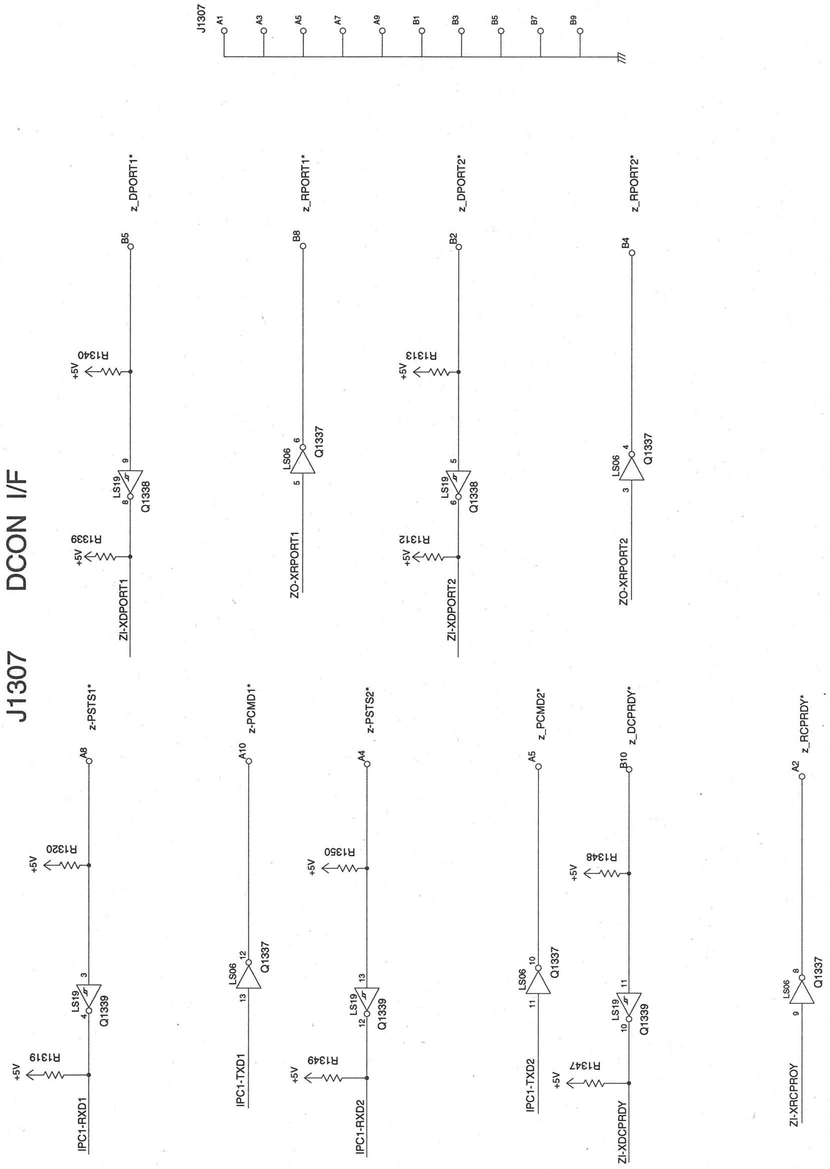
Reader Controller Circuit Diagram (5/15)


J1304 CC-V
CCD*
CCDT*
+5V
R1338
R1337
Q1302
Z1-CCVCNCT*
Z0-CCVCNCT
J1301 Power Supply
C1303
C1312
R1375
LED1301
C1301
C1314
R1376
LED1302
C1302
C1313
R1377
LED1303
+24V
J1306 CCX (ASSIST)
B7
B8
B9
B10
B11
B12
B13
B14
RXD
TXD
CNTP
R1301
R1302
C1309
LS19
Q1339
R1346
HC04
Q1345
IPC0-RXD3
LS06
Q1325
IPC0-TXD3
R1325
HC240
Q1326
Z0-CNTP*
J1306 RF-i
B1
B2
B3
B4
B5
B6
Q1337
R1303
R1367
C1360
DA1326
IPC0-TXD2
Q1372
LS240
Q1331
R1362
IPC0-RXD2

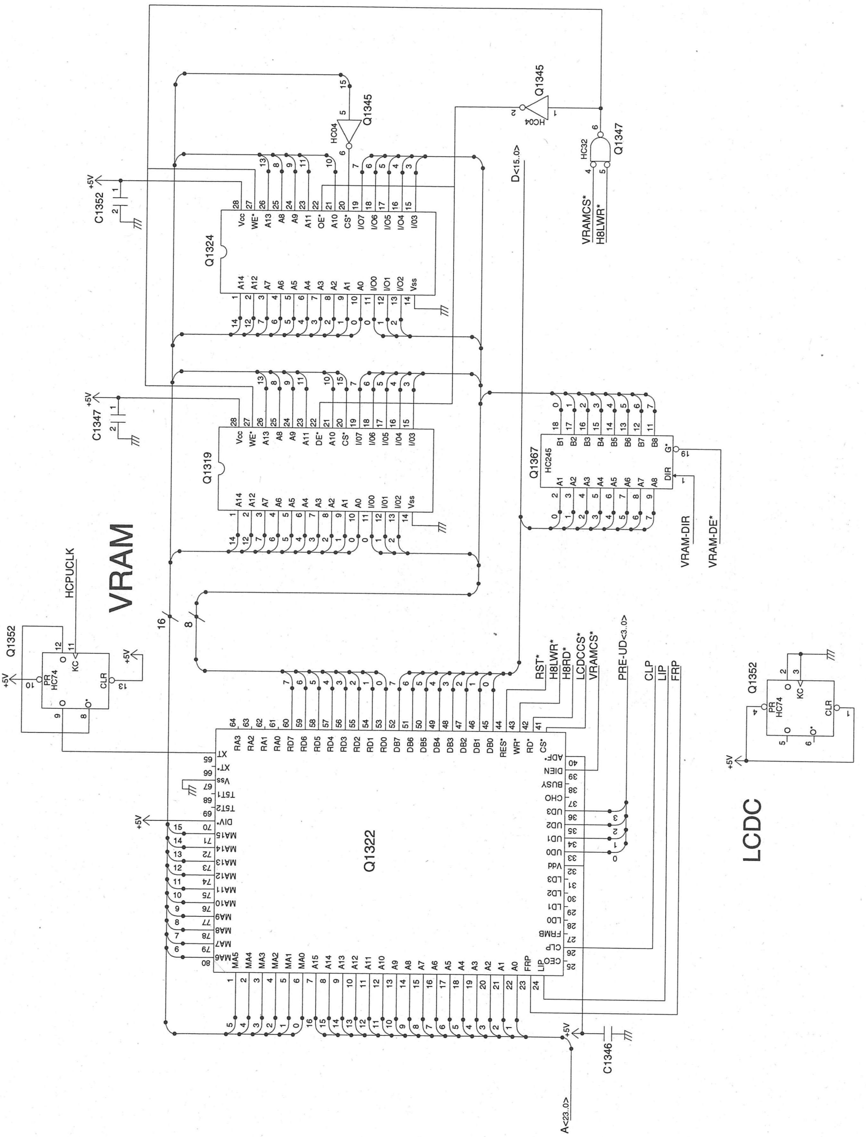
Reader Controller Circuit Diagram (6/15)


PIODASH
Q1310
M65022FP
R1371
ZI-RTN15
ZI-RTN14
ZI-RTN13
ZI-RTN12
ZI-RTN11
ZI-RTN10
ZI-RTN9
ZI-RTN8
ZI-RTN22
ZI-RTN21
ZI-RTN20
ZI-RTN19
ZI-RTN18
ZI-RTN17
ZI-RTN16
ZI-RTN7
ZI-RTN6
ZI-RTN5
ZI-RTN4
ZI-RTN3
ZI-RTN2
ZI-RTN1
ZI-RTN0
P102B
P102C
P102A
RST
PIOC50*
PIOC51*
PIOC52*
H8LWR*
H8RD
D<15..0>
A<23..0>
+5V
C1330
P100A
P100C
P100B
P101A
P101C
P101B
R1370
R1369
R1368
CP1305
ZI-CCVCNCT*
ZI-EDITCNCT*
ZI-OMACK
ZI-ITOP
ZI-XDPORT2
ZI-XDPORT1
ZI-XDCPRDY
ZO-OMREQ
ZO-OMFN_ON
ZO-XRPORT2
ZO-XRPORT1
ZO-XRCPRDY
ZO-CCVCNT
ZO-CNTP*
ZO-GATE0
ZO-WATCHDOG
ZO-RCON-FAN
ZO-PRJSSRON
ZO-OMRESET*
ZO-EDITRED
ZI-WPE*
ZI-KPE*
ZI-YPE*
ZI-CPE*
ZI-MPE*
ZI-EDITACK
ZO-BEEP
ZO-LIGHT
ZO-DISPOFF
ZO-SCAN11
ZO-SCAN10
ZO-SCAN9
ZO-SCAN8
ZO_SCAN7
ZO_SCAN6
ZO_SCAN5
ZO_SCAN4
ZO_SCAN3
ZO_SCAN2
ZO_SCAN1
ZO_SCAN0

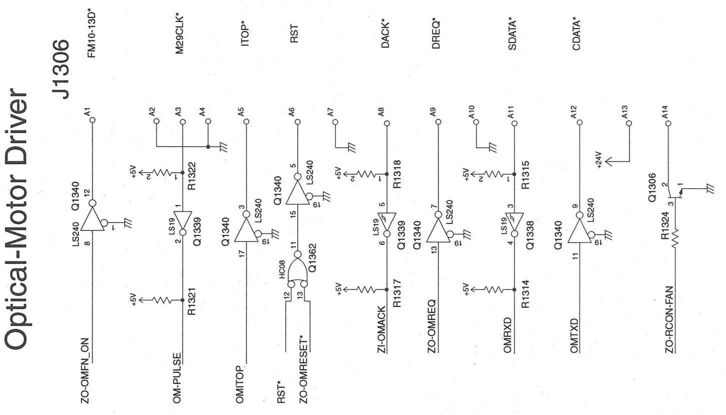
Reader Controller Circuit Diagram (7/15)

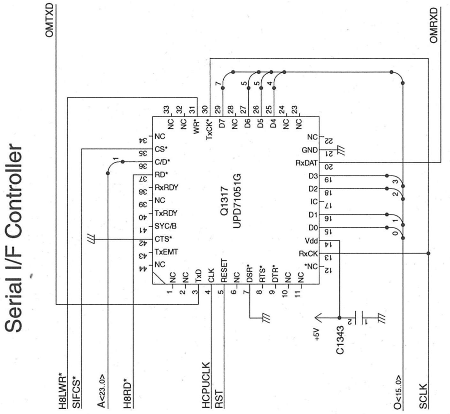

J1307
A1
A3
A5
A7
A9
B1
B3
B5
B7
B9
J1307 DCON I/F
z_DPORT1*
B5
R1340
+5V
LS19
9
8
Q1338
R1339
+5V
ZI-XDPORT1
z_RPORT1*
B8
LS06
6
5
Q1337
ZO-XRPORT1
z_DPORT2*
B2
R1313
+5V
LS19
5
6
Q1338
R1312
+5V
ZI-XDPORT2
z_RPORT2*
B4
LS06
4
3
Q1337
ZO-XRPORT2
z-PSTS1*
A8
R1320
+5V
LS19
3
4
Q1339
R1319
+5V
IPC1-RXD1
z-PCMD1*
A10
LS06
12
13
Q1337
IPC1-TXD1
z-PSTS2*
A4
R1350
+5V
LS19
13
12
Q1339
R1349
+5V
IPC1-RXD2
z_PCMD2*
A5
LS06
10
11
Q1337
IPC1-TXD2
z_DCPRDY*
B10
R1348
+5V
LS19
11
10
Q1339
R1347
+5V
ZI-XDCPRDY
z_RCPRDY*
A2
LS06
8
9
Q1337
ZI-XRCPROY

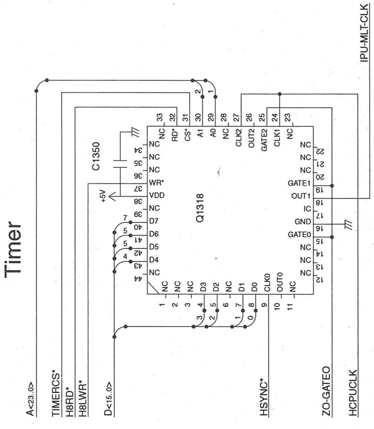
Reader Controller Circuit Diagram (8/15)


VRAM
LCDC
Q1324
Q1319
Q1322
Q1345
HC04
Q1347
HC32
Q1367
HC245
Q1352
HC74
C1352
C1347
C1346
+5V
D<15..0>
A<23..0>
VRAMCS*
H8LWR*
RST*
H8RD*
LCDCCS*
PRE-UD<3..0>
CLP
LIP
FRP
VRAM-DIR
VRAM-DE*
HCPUCLK
16
8

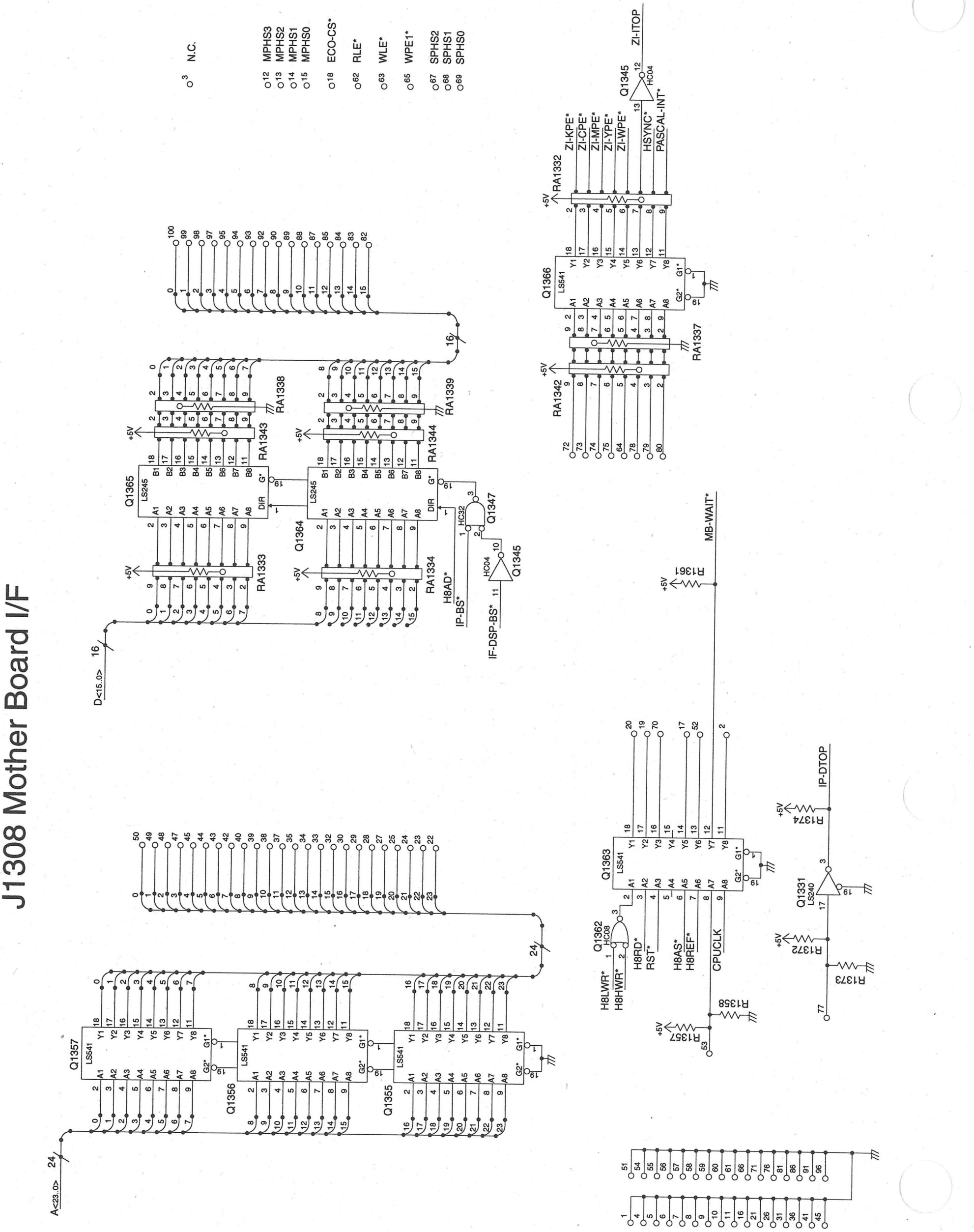
Reader Controller Circuit Diagram (9/15)


Optical-Motor Driver
J1306
FM10-13D*
M29CLK*
ITOP*
RST
DACK*
DREQ*
SDATA*
CDATA*
ZO-OMFN_ON
OM-PULSE
OMITOP
RST*
ZO-OMRESET*
ZI-OMACK
ZO-OMREQ
OMRXD
OMTXD
ZO-RCON-FAN
Q1340
LS240
Q1339
LS19
Q1338
Q1362
HC08
Q1306
R1321
R1322
R1317
R1318
R1314
R1315
R1324
+5V
+24V

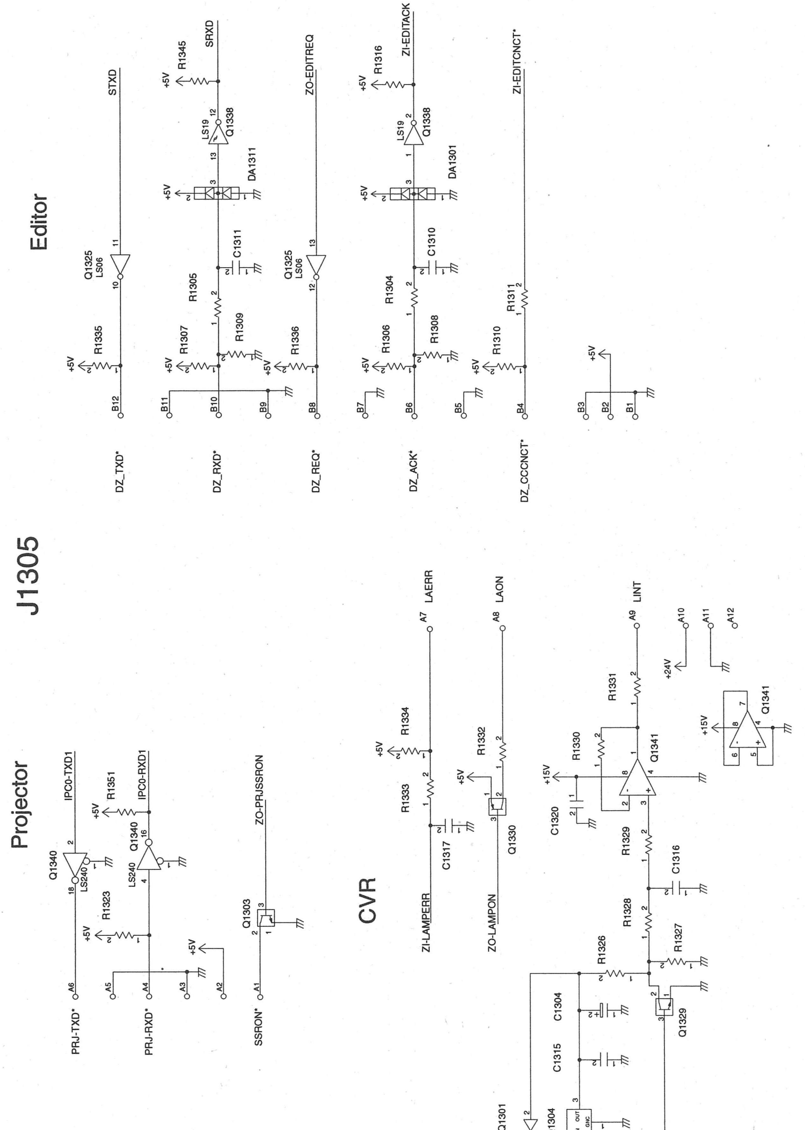

Serial I/F Controller
OMTXD
OMRXD
Q1317
UPD71051G
H8LWR*
SIFCS*
A<23..0>
H8RD*
HCPUCLK
RST
D<15..0>
SCLK
C1343
+5V
NC
CS*
C/D*
RD*
RxRDY
TxRDY
SYC/B
CTS*
TxEMT
WR*
TxCK*
D7
D6
D5
D4
GND
RxDAT
D3
D2
IC
D1
D0
Vdd
RxCK
*NC
TxD
CLK
RESET
DSR*
RTS*
DTR*


Timer
Q1318
C1350
IPU-MLT-CLK
A<23..0>
TIMERCS*
H8RD*
H8LWR*
D<15..0>
HSYNC*
ZO-GATE0
HCPUCLK
+5V
NC
RD*
CS*
A1
A0
CLK2
OUT2
GATE2
CLK1
WR*
VDD
D7
D6
D5
D4
D3
D2
D1
D0
CLK0
OUT0
GATE1
OUT1
IC
GND
GATE0

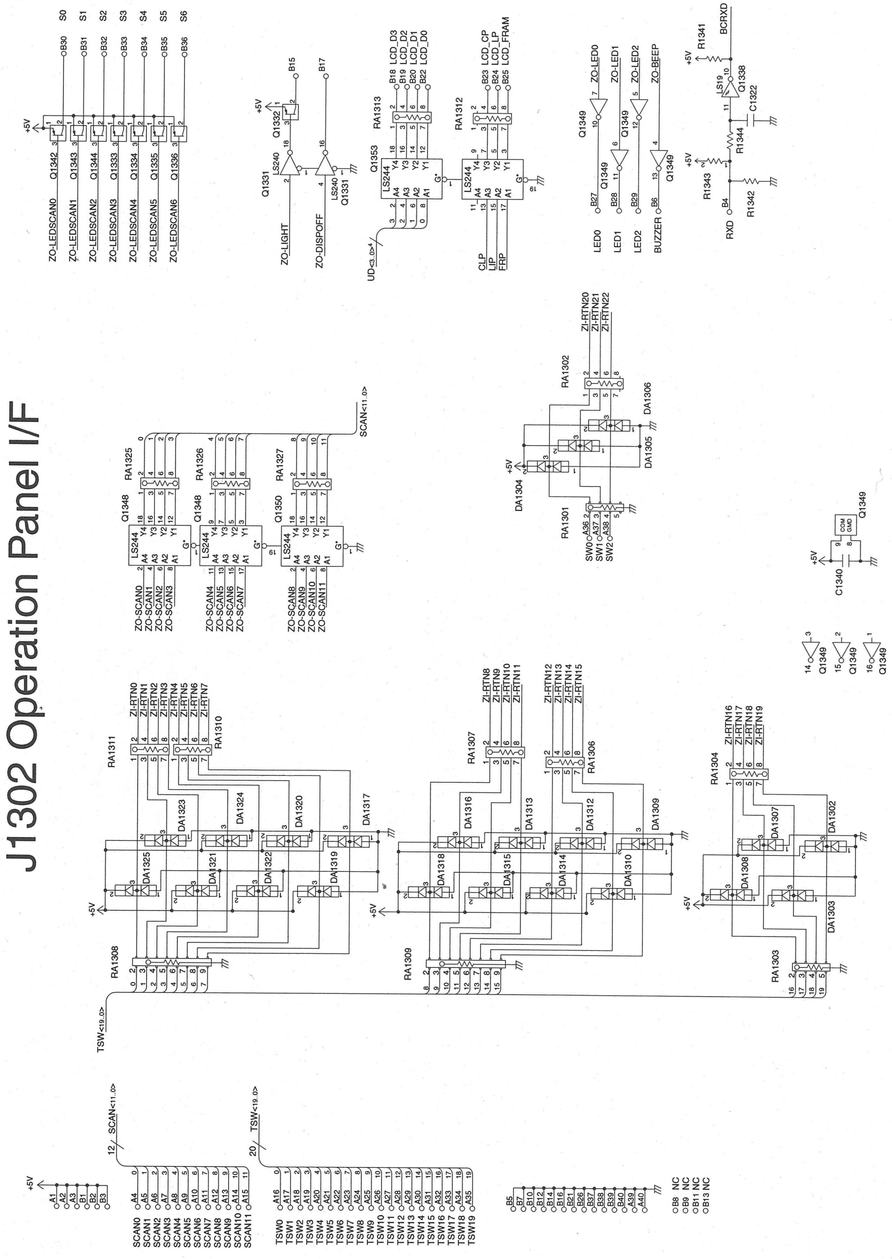
Reader Controller Circuit Diagram (10/15)


J1308 Mother Board I/F
N.C.
MPHS3
MPHS2
MPHS1
MPHS0
ECO-CS*
RLE*
WLE*
WPE1*
SPHS2
SPHS1
SPHS0
ZI-ITOP
ZI-KPE*
ZI-CPE*
ZI-MPE*
ZI-YPE*
ZI-WPE*
HSYNC*
PASCAL-INT*
Q1345
HC04
RA1332
RA1337
RA1342
Q1366
LS541
RA1338
RA1339
RA1343
RA1344
RA1333
RA1334
Q1365
Q1364
LS245
Q1347
HC32
H8AD*
IP-BS*
IF-DSP-BS*
D<15..0>
16
MB-WAIT*
R1361
+5V
Q1357
Q1356
Q1355
24
A<23..0>
Q1363
Q1362
HC08
H8LWR*
H8HWR*
H8RD*
RST*
H8AS*
H8REF*
CPUCLK
R1357
R1358
IP-DTOP
R1374
Q1331
LS240
R1372
R1373

Reader Controller Circuit Diagram (11/15)


J1305
Editor
Projector
CVR
DZ_TXD*
DZ_RXD*
DZ_REQ*
DZ_ACK*
DZ_CCCNCT*
B12
B11
B10
B9
B8
B7
B6
B5
B4
B3
B2
B1
STXD
SRXD
ZO-EDITREQ
ZI-EDITACK
ZI-EDITCNCT*
Q1325
LS06
R1335
R1307
R1309
R1305
C1311
DA1311
LS19
Q1338
R1345
R1336
R1306
R1308
R1304
C1310
DA1301
R1316
R1310
R1311
+5V
PRJ-TXD*
PRJ-RXD*
SSRON*
A6
A5
A4
A3
A2
A1
Q1340
LS240
R1323
R1351
IPC0-TXD1
IPC0-RXD1
Q1303
ZO-PRJSSRON
ZI-LAMPERR
ZO-LAMPON
LAERR
LAON
LINT
A7
A8
A9
A10
A11
A12
R1333
R1334
C1317
R1332
Q1330
C1320
R1330
Q1341
R1331
R1329
C1316
R1328
R1327
R1326
Q1329
C1304
C1315
Q1304
Q1301
+15V
+24V
LAMOUT
IN OUT GND

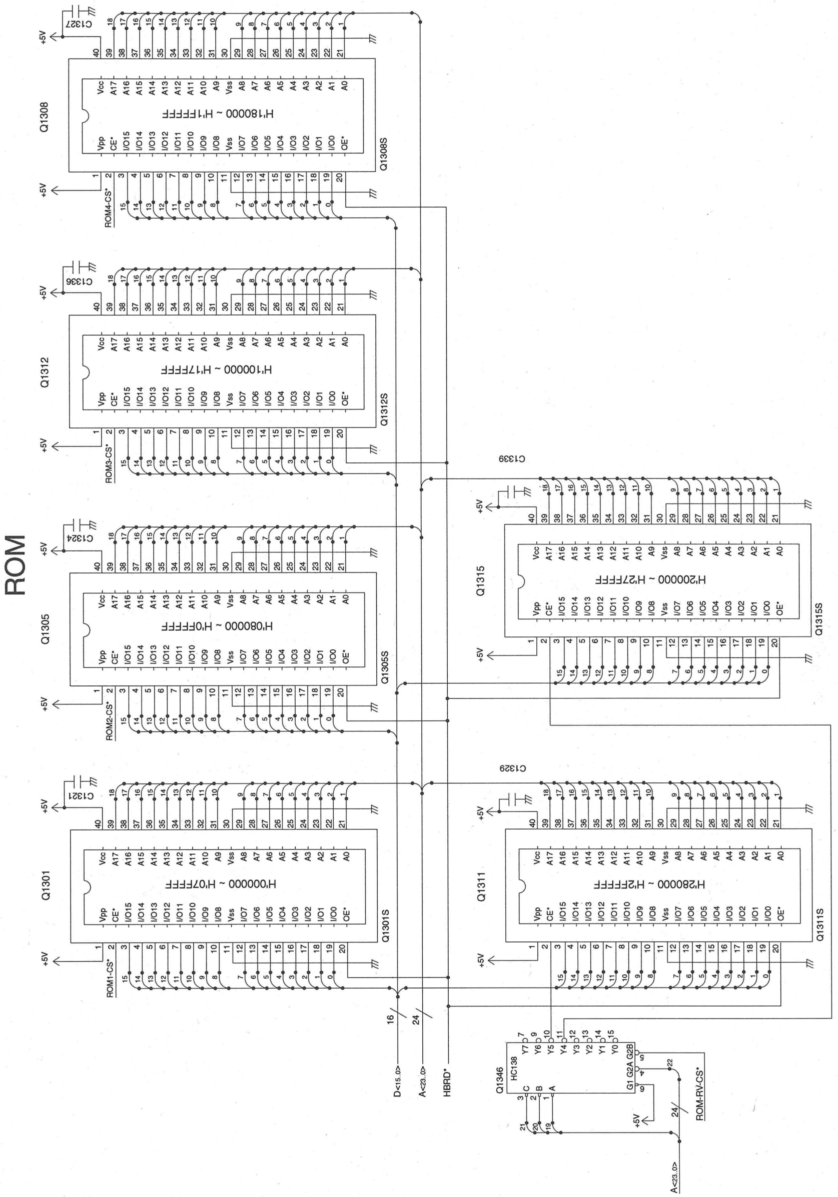
Reader Controller Circuit Diagram (12/15)



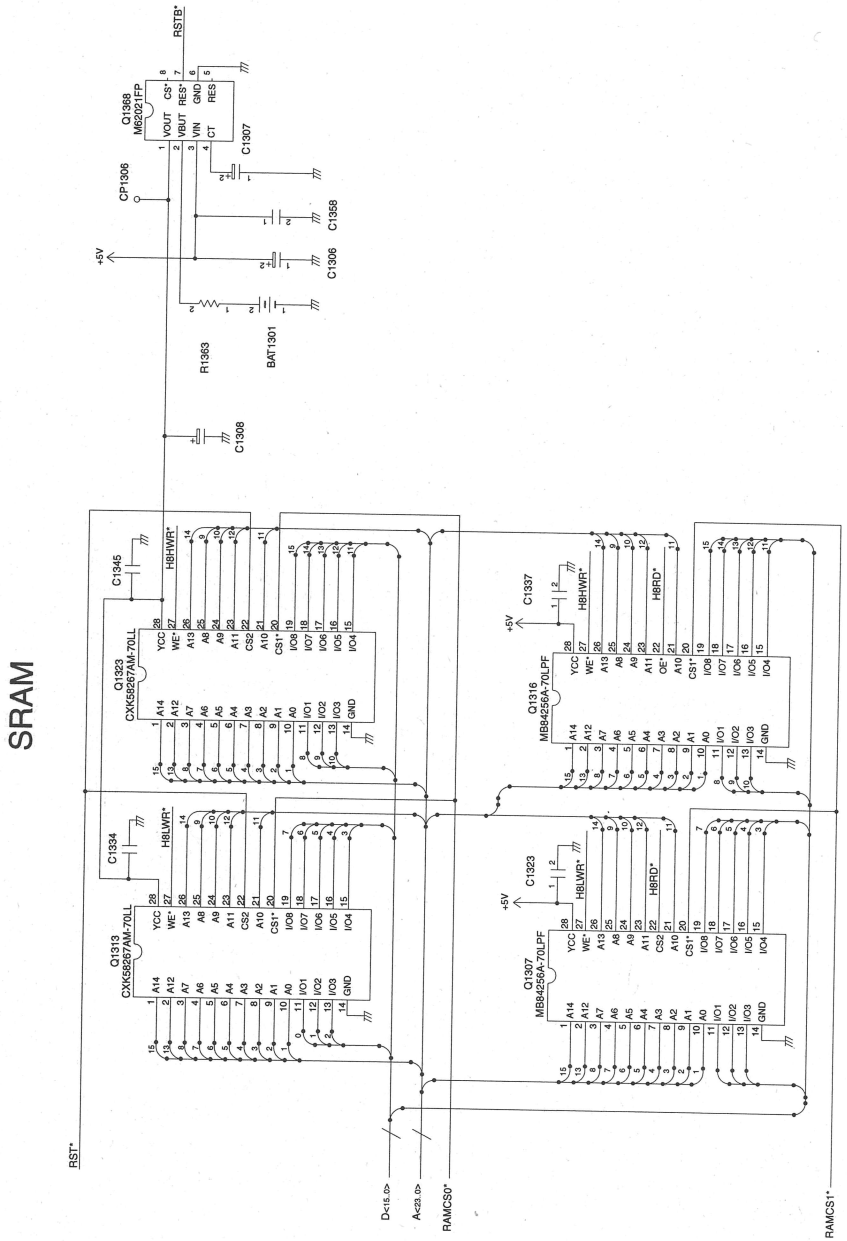
J1302 Operation Panel I/F

ZO-LEDSCAN0
ZO-LEDSCAN1
ZO-LEDSCAN2
ZO-LEDSCAN3
ZO-LEDSCAN4
ZO-LEDSCAN5
ZO-LEDSCAN6
Q1342
Q1343
Q1344
Q1333
Q1334
Q1335
Q1336
S0
S1
S2
S3
S4
S5
S6
ZO-LIGHT
ZO-DISPOFF
Q1331
Q1332
LS240
B15
B17
UD<3..0>
Q1353
RA1313
LS244
LCD_D3
LCD_D2
LCD_D1
LCD_D0
RA1312
CLP
LIP
FRP
LCD_CP
LCD_LP
LCD_FRAM
Q1349
ZO-LED0
ZO-LED1
ZO-LED2
ZO-BEEP
LED0
LED1
LED2
BUZZER
RXD
BCRXD
R1341
R1342
R1343
R1344
Q1338
LS19
C1322
+5V
RA1302
ZI-RTN20
ZI-RTN21
ZI-RTN22
DA1304
DA1305
DA1306
RA1301
SW0
SW1
SW2
SCAN<11..0>
RA1325
RA1326
RA1327
Q1348
Q1350
ZO-SCAN0
ZO-SCAN1
ZO-SCAN2
ZO-SCAN3
ZO-SCAN4
ZO-SCAN5
ZO-SCAN6
ZO-SCAN7
ZO-SCAN8
ZO-SCAN9
ZO-SCAN10
ZO-SCAN11
C1340
RA1311
RA1310
ZI-RTN0
ZI-RTN1
ZI-RTN2
ZI-RTN3
ZI-RTN4
ZI-RTN5
ZI-RTN6
ZI-RTN7
RA1307
ZI-RTN8
ZI-RTN9
ZI-RTN10
ZI-RTN11
RA1306
ZI-RTN12
ZI-RTN13
ZI-RTN14
ZI-RTN15
RA1304
ZI-RTN16
ZI-RTN17
ZI-RTN18
ZI-RTN19
DA1325
DA1323
DA1321
DA1324
DA1322
DA1320
DA1319
DA1317
DA1318
DA1316
DA1315
DA1313
DA1314
DA1312
DA1310
DA1309
DA1308
DA1307
DA1303
DA1302
RA1308
RA1309
RA1303
TSW<19..0>
SCAN0
SCAN1
SCAN2
SCAN3
SCAN4
SCAN5
SCAN6
SCAN7
SCAN8
SCAN9
SCAN10
SCAN11
TSW0
TSW1
TSW2
TSW3
TSW4
TSW5
TSW6
TSW7
TSW8
TSW9
TSW10
TSW11
TSW12
TSW13
TSW14
TSW15
TSW16
TSW17
TSW18
TSW19
B8 NC
B9 NC
B11 NC
B13 NC

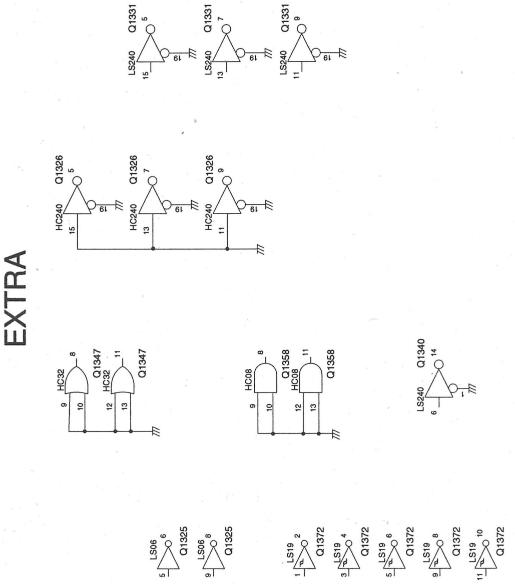
Reader Controller Circuit Diagram (13/15)

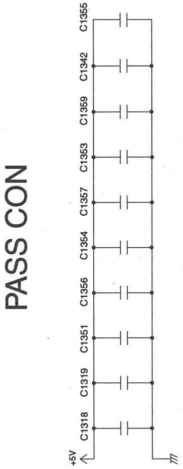

ROM
Q1308
H'180000 ~ H'1FFFFF
Q1308S
C1327
ROM4-CS*
Q1312
H'100000 ~ H'17FFFF
Q1312S
C1336
ROM3-CS*
Q1305
H'080000 ~ H'0FFFFF
Q1305S
C1324
ROM2-CS*
Q1301
H'000000 ~ H'07FFFF
Q1301S
C1321
ROM1-CS*
Q1315
H'200000 ~ H'27FFFF
Q1315S
C1339
Q1311
H'280000 ~ H'2FFFFF
Q1311S
C1329
Q1346
HC138
ROM-RV-CS*
D<15..0>
A<23..0>
HBRD*
+5V
16
24

Reader Controller Circuit Diagram (14/15)


SRAM
Q1368
M62021FP
VOUT
VBUT
VIN
CT
CS*
RES*
GND
RES
RSTB*
CP1306
+5V
C1307
C1358
C1306
R1363
BAT1301
C1308
C1345
C1334
C1337
C1323
Q1323
CXK58267AM-70LL
Q1313
CXK58267AM-70LL
Q1316
MB84256A-70LPF
Q1307
MB84256A-70LPF
H8HWR*
H8LWR*
H8RD*
YCC
WE*
OE*
CS1*
CS2
I/O1
I/O2
I/O3
I/O4
I/O5
I/O6
I/O7
I/O8
GND
RST*
D<15..0>
A<23..0>
RAMCS0*
RAMCS1*

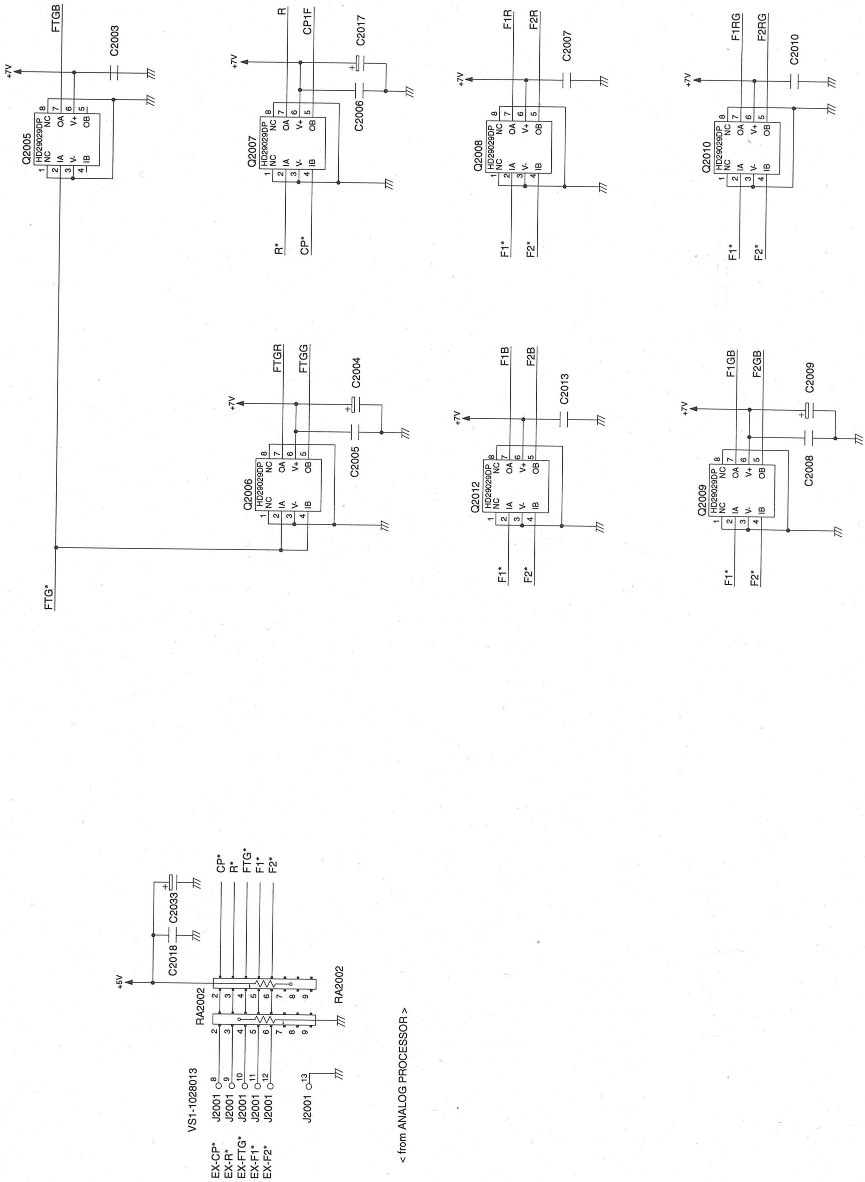
Reader Controller Circuit Diagram (15/15)


EXTRA
LS240
Q1331
15
5
19
13
7
11
9
HC240
Q1326
HC32
Q1347
10
8
12
HC08
Q1358
LS240
Q1340
6
14
1
LS06
Q1325
LS19
Q1372
2
3
4

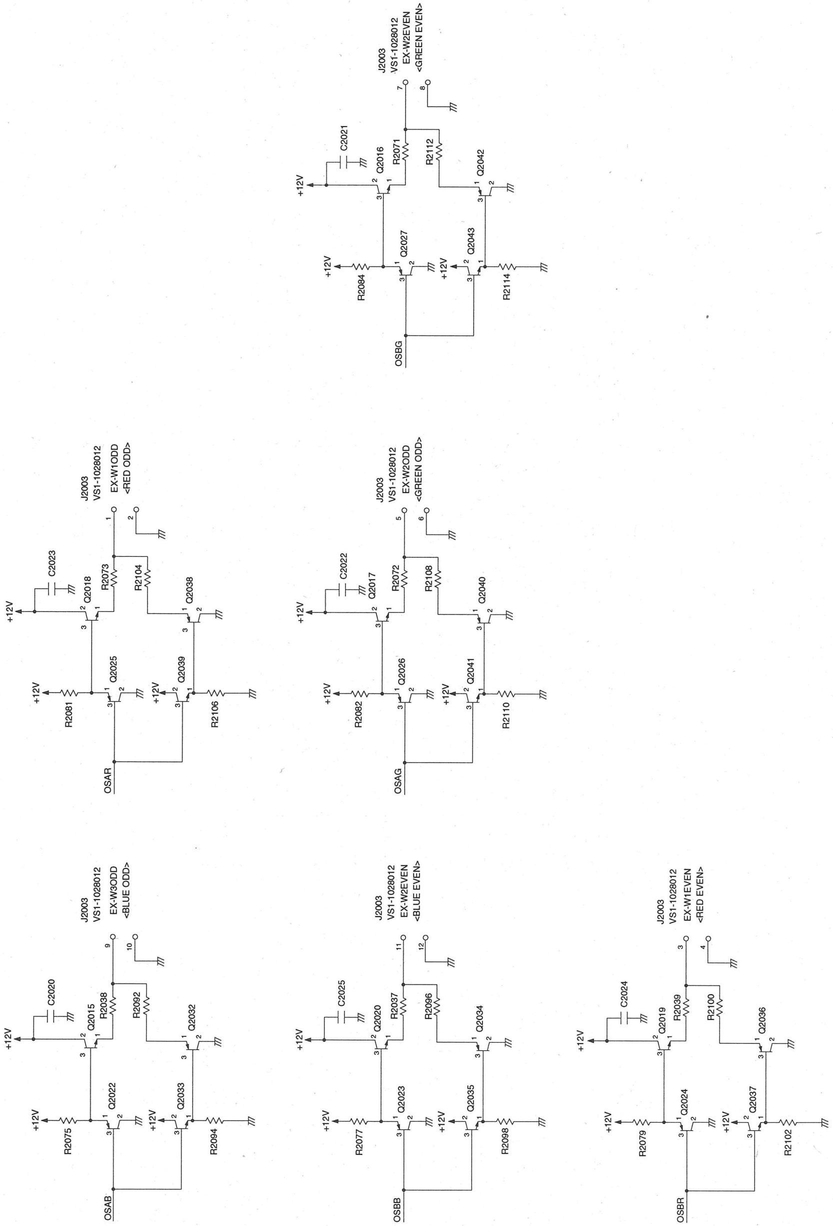

PASS CON
+5V
C1318
C1319
C1351
C1356
C1354
C1357
C1353
C1359
C1342
C1355

F. CCD DRIVER CIRCUIT DIAGRAM

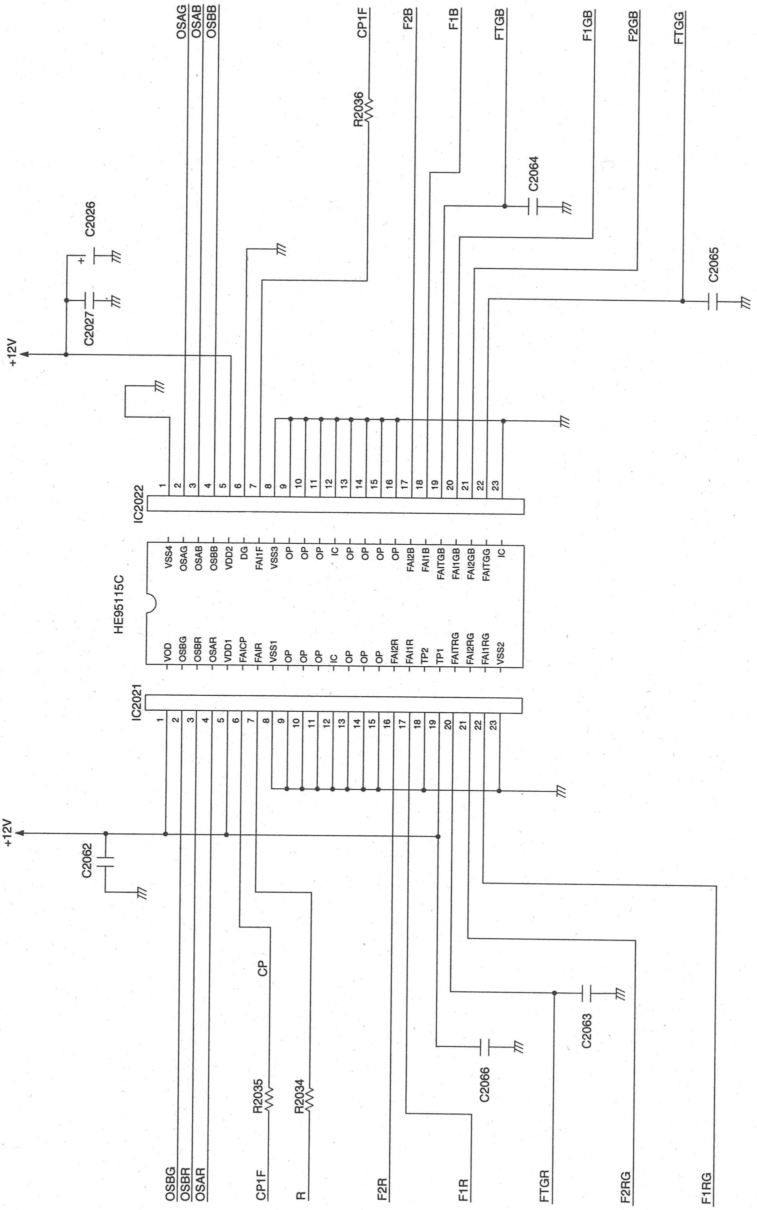
CCD Driver Circuit Diagram (1/4)


FTGB
C2003
+7V
Q2005
HD29029DP
NC
IA
V-
IB
OA
V+
OB
R
CP1F
C2017
C2006
Q2007
R*
CP*
F1R
F2R
C2007
Q2008
F1*
F2*
F1RG
F2RG
C2010
Q2010
FTGR
FTGG
C2004
C2005
Q2006
F1B
F2B
C2013
Q2012
F1GB
F2GB
C2009
C2008
Q2009
FTG*
+5V
C2033
C2018
CP*
R*
FTG*
F1*
F2*
RA2002
RA2002
VS1-1028013
J2001
EX-CP*
EX-R*
EX-FTG*
EX-F1*
EX-F2*
< from ANALOG PROCESSOR >

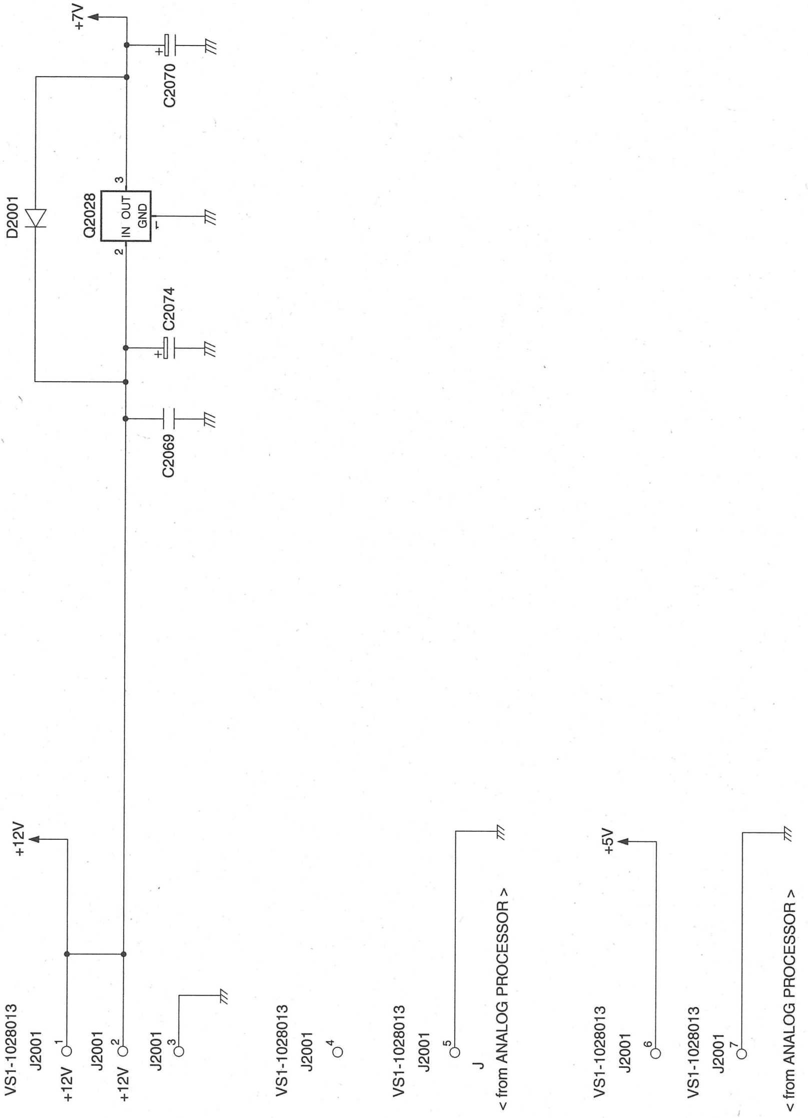
CCD Driver Circuit Diagram (2/4)


J2003
VS1-1028012
EX-W2EVEN
<GREEN EVEN>
C2021
Q2016
R2071
R2112
Q2042
Q2027
Q2043
R2084
R2114
+12V
OSBG
J2003
VS1-1028012
EX-W1ODD
<RED ODD>
C2023
Q2018
R2073
R2104
Q2038
Q2025
Q2039
R2081
R2106
+12V
OSAR
J2003
VS1-1028012
EX-W2ODD
<GREEN ODD>
C2022
Q2017
R2072
R2108
Q2040
Q2026
Q2041
R2082
R2110
+12V
OSAG
J2003
VS1-1028012
EX-W3ODD
<BLUE ODD>
C2020
Q2015
R2038
R2092
Q2032
Q2022
Q2033
R2075
R2094
+12V
OSAB
J2003
VS1-1028012
EX-W2EVEN
<BLUE EVEN>
C2025
Q2020
R2037
R2096
Q2034
Q2023
Q2035
R2077
R2098
+12V
OSBB
J2003
VS1-1028012
EX-W1EVEN
<RED EVEN>
C2024
Q2019
R2039
R2100
Q2036
Q2024
Q2037
R2079
R2102
+12V
OSBR

CCD Driver Circuit Diagram (3/4)

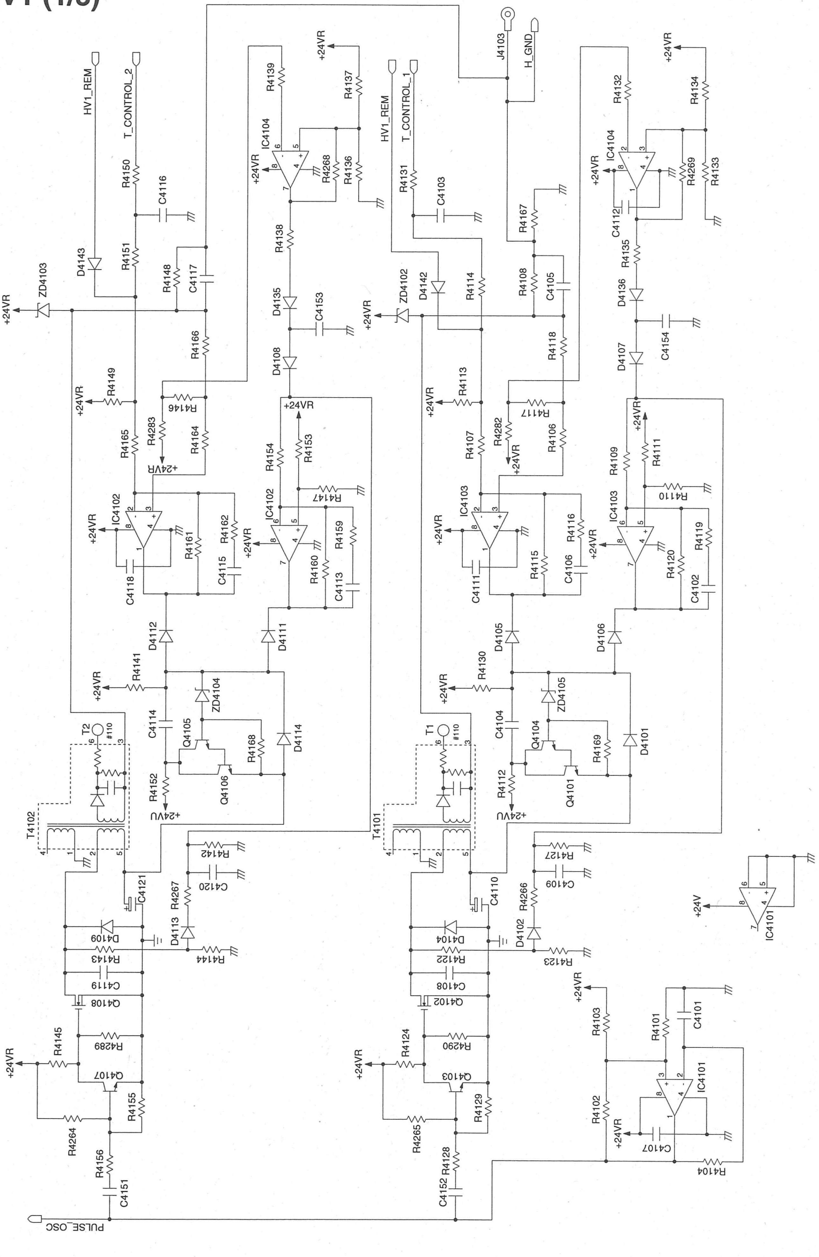

OSAG
OSAB
OSBB
CP1F
F2B
F1B
FTGB
F1GB
F2GB
FTGG
R2036
C2064
C2026
C2027
C2065
+12V
IC2022
HE95115C
VSS4
OSAG
OSAB
OSBB
VDD2
DG
FAI1F
VSS3
OP
OP
OP
IC
OP
OP
OP
OP
FAI2B
FAI1B
FAITGB
FAI1GB
FAI2GB
FAITGG
IC
VOD
OSBG
OSBR
OSAR
VDD1
FAICP
FAIR
VSS1
OP
OP
OP
IC
OP
OP
OP
FAI2R
FAI1R
TP2
TP1
FAITRG
FAI2RG
FAI1RG
VSS2
IC2021
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
+12V
C2062
CP
R2035
R2034
C2063
C2066
OSBG
OSBR
OSAR
CP1F
R
F2R
F1R
FTGR
F2RG
F1RG

CCD Driver Circuit Diagram (4/4)

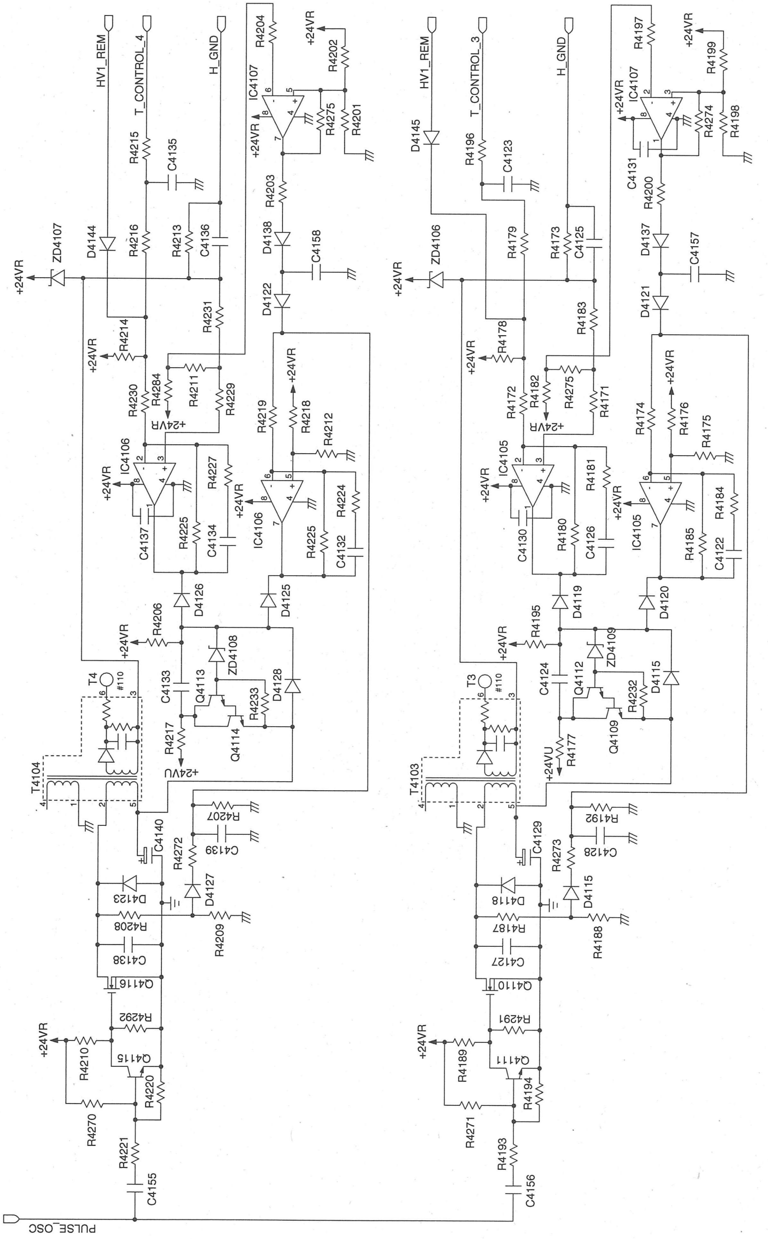

+7V
C2070
D2001
Q2028
IN
OUT
GND
1
2
3
C2074
C2069
+12V
VS1-1028013
J2001
+12V
1
J2001
+12V
2
J2001
3
VS1-1028013
J2001
4
VS1-1028013
J2001
5
J
< from ANALOG PROCESSOR >
+5V
VS1-1028013
J2001
6
VS1-1028013
J2001
7
< from ANALOG PROCESSOR >

G. HVT CIRCUIT DIAGRAM

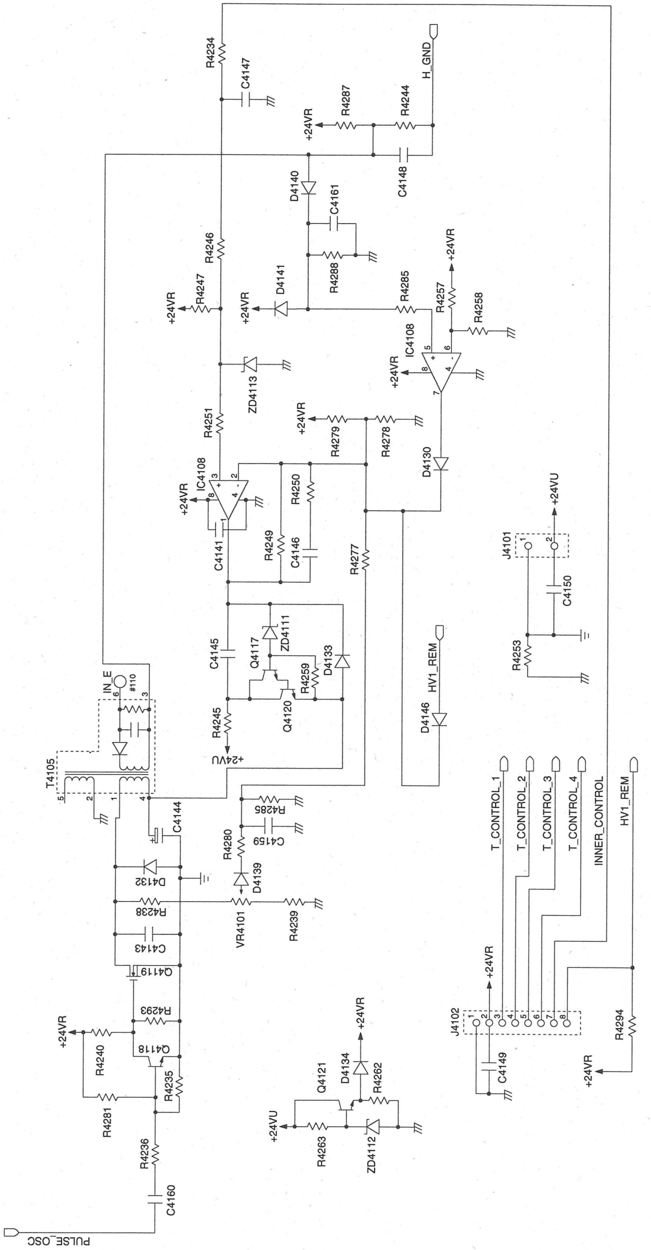
HV1 (1/3)


HV1_REM
T_CONTROL_2
HV1_REM
T_CONTROL_1
J4103
H_GND
+24VR
+24VU
+24V
R4150
C4116
R4151
D4143
ZD4103
R4148
C4117
R4166
R4149
R4146
R4165
R4283
R4164
R4139
R4137
IC4104
R4268
R4136
R4138
D4135
C4153
D4108
R4154
R4153
R4147
IC4102
R4161
R4162
C4115
C4118
R4159
R4160
C4113
D4112
D4111
R4141
ZD4104
C4114
Q4105
Q4106
R4168
D4114
R4152
T2
#110
T4102
C4121
R4142
C4120
R4267
D4113
D4109
R4143
R4144
C4119
Q4108
R4289
R4145
Q4107
R4155
R4264
R4156
C4151
PULSE_OSC
R4131
C4103
ZD4102
D4142
R4114
R4113
R4107
R4282
R4167
R4108
C4105
R4118
R4117
R4106
R4132
R4134
R4269
R4133
C4112
R4135
D4136
C4154
D4107
R4109
R4111
R4110
IC4103
R4115
C4106
R4116
C4111
R4120
R4119
C4102
D4105
D4106
R4130
ZD4105
C4104
Q4104
Q4101
R4169
D4101
R4112
T1
T4101
C4110
R4127
C4109
R4266
D4102
D4104
R4122
R4123
C4108
Q4102
R4290
R4124
Q4103
R4129
R4265
R4128
C4152
IC4101
R4103
R4101
C4101
R4102
C4107
R4104

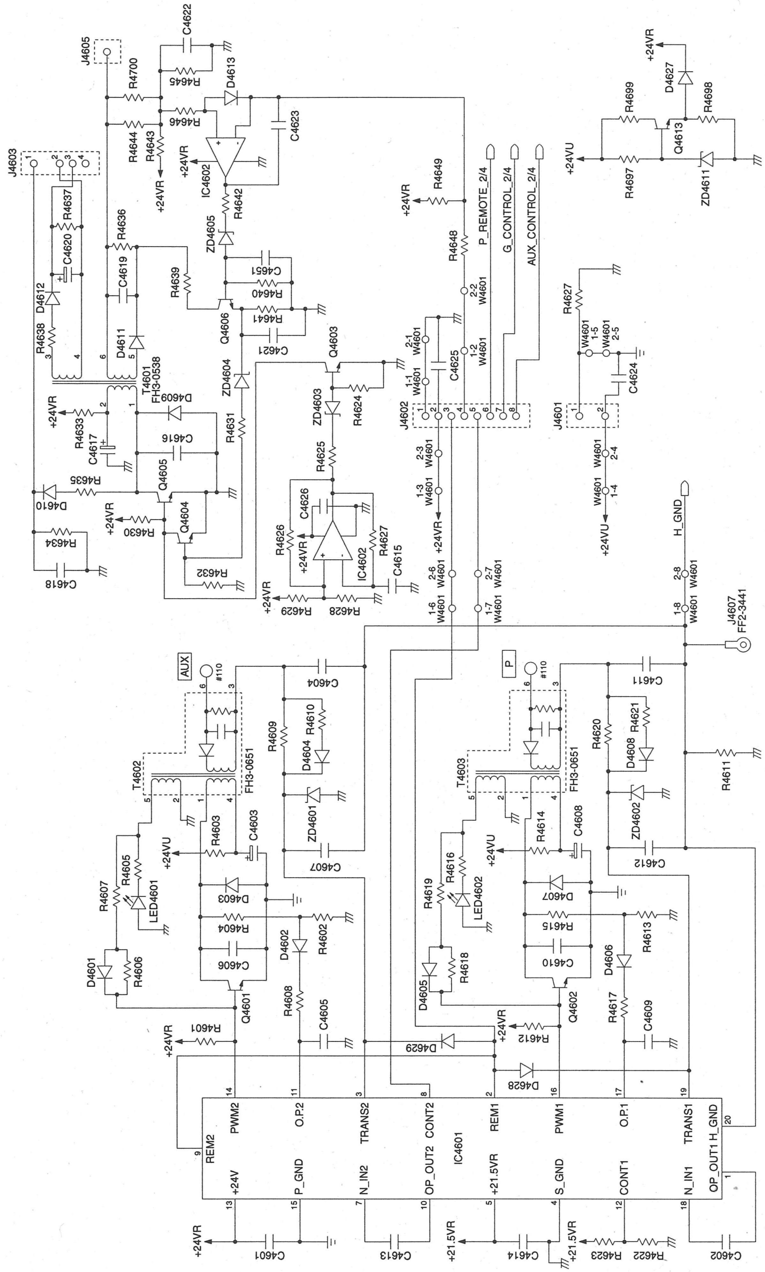
HV1 (2/3)


HV1_REM
T_CONTROL_4
H_GND
R4204
+24VR
R4202
IC4107
R4275
R4201
R4215
C4135
R4203
D4138
C4158
D4122
ZD4107
D4144
R4216
R4213
C4136
R4231
R4214
R4230
R4284
+24VR
R4211
R4229
R4219
R4218
R4212
IC4106
R4227
C4137
R4225
C4134
R4224
C4132
D4126
D4125
R4206
C4133
ZD4108
Q4113
R4233
D4128
Q4114
R4217
+24VU
T4
#110
T4104
C4140
R4207
C4139
R4272
D4127
D4123
R4208
R4209
C4138
Q4116
R4292
R4210
Q4115
R4220
R4270
R4221
C4155
PULSE_OSC
HV1_REM
T_CONTROL_3
H_GND
D4145
R4196
C4123
R4197
R4199
IC4107
R4274
R4198
C4131
R4200
D4137
C4157
D4121
ZD4106
R4179
R4173
C4125
R4178
R4183
R4172
R4182
R4275
R4171
R4174
R4176
R4175
IC4105
R4181
C4130
R4180
C4126
R4185
C4122
R4184
D4119
D4120
R4195
C4124
Q4112
ZD4109
D4115
R4232
Q4109
R4177
T3
T4103
C4129
R4192
C4128
R4273
D4118
R4187
R4188
C4127
Q4110
R4291
R4189
Q4111
R4194
R4271
R4193
C4156

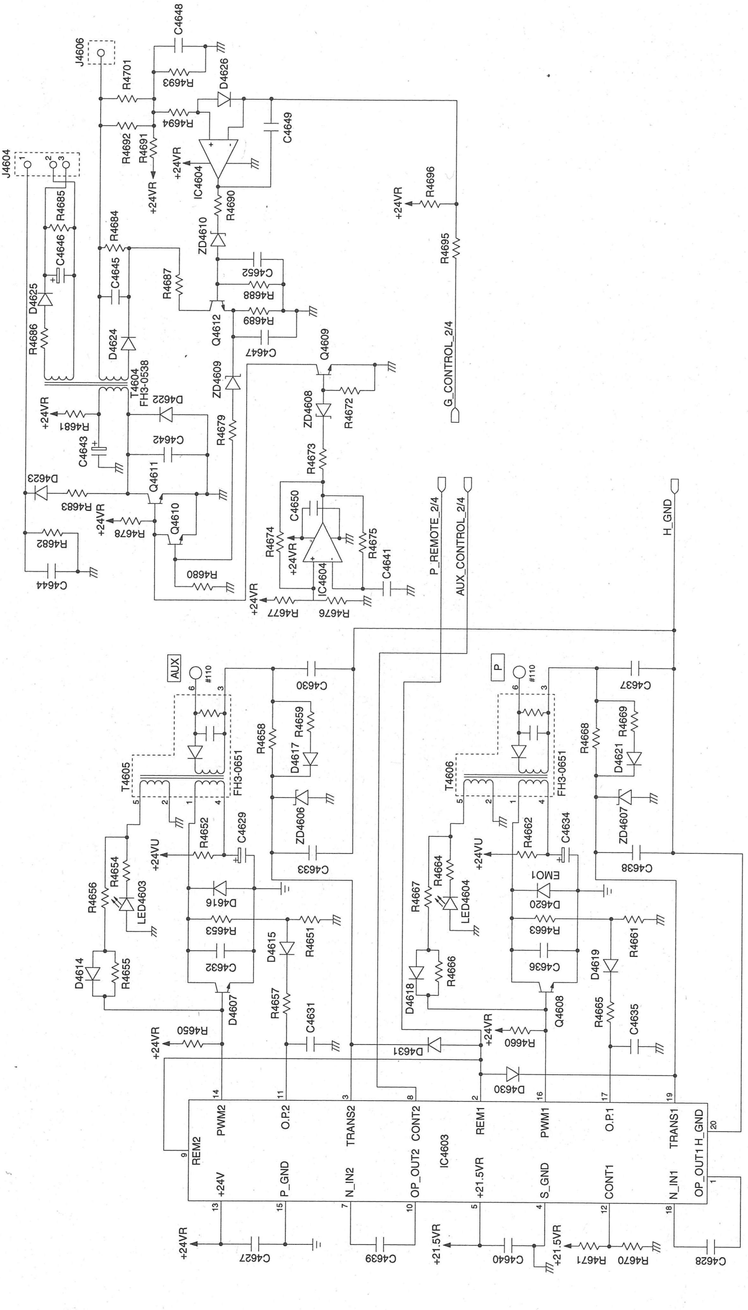
HV1 (3/3)


R4234
C4147
H_GND
+24VR
R4287
R4244
C4148
D4140
C4161
R4246
R4247
D4141
R4288
R4285
R4257
R4258
IC4108
ZD4113
R4251
R4279
R4278
D4130
R4250
R4249
C4146
C4141
R4277
J4101
+24VU
C4150
R4253
C4145
Q4117
ZD4111
D4133
R4259
Q4120
R4245
IN_E
#110
T4105
HV1_REM
D4146
C4144
R4285
C4159
R4280
D4139
D4132
R4238
VR4101
R4239
C4143
Q4119
R4293
Q4118
R4240
R4235
R4281
R4236
C4160
PULSE_OSC
Q4121
D4134
R4262
R4263
ZD4112
T_CONTROL_1
T_CONTROL_2
T_CONTROL_3
T_CONTROL_4
INNER_CONTROL
J4102
C4149
R4294

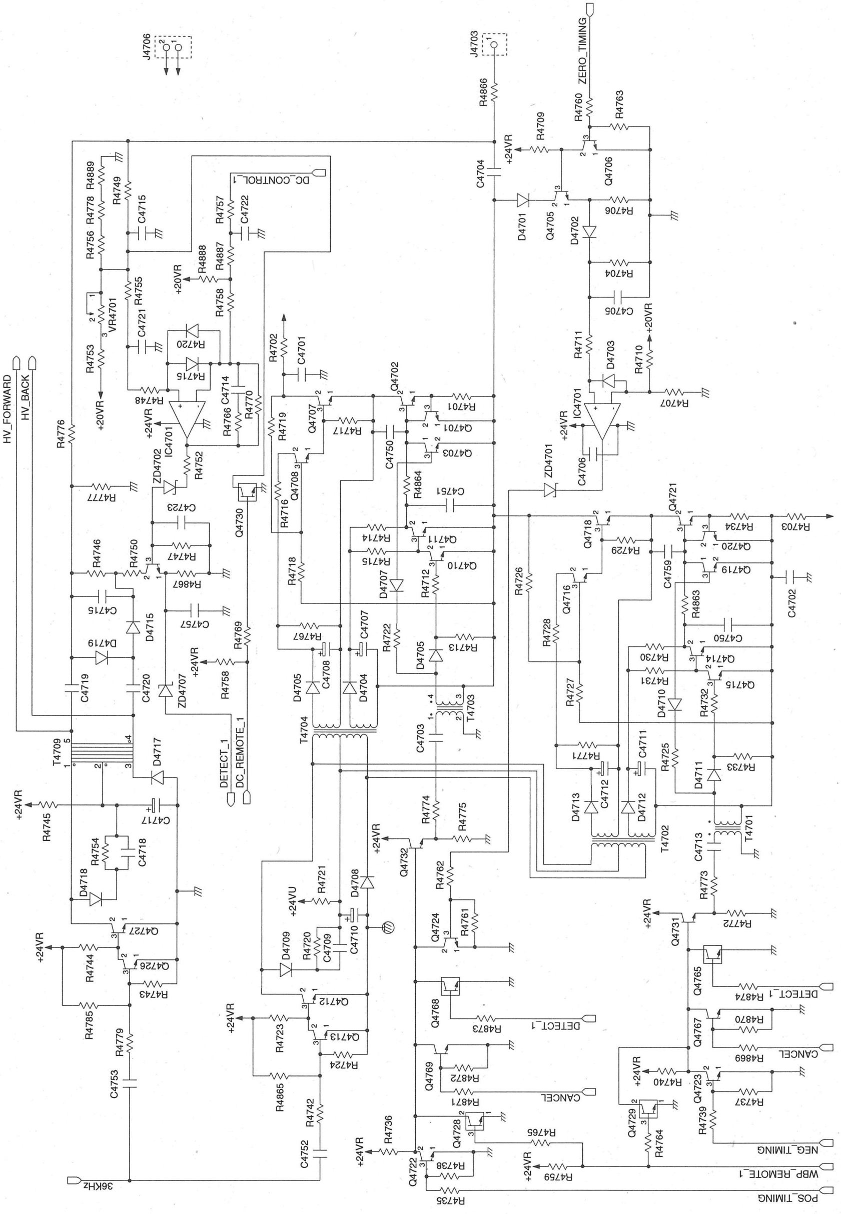
HV2 (1/2)


J4605
J4603
C4622
R4700
R4645
R4646
D4613
C4623
R4644
R4643
+24VR
IC4602
R4642
ZD4605
R4637
C4620
R4636
C4619
C4651
R4640
R4639
R4641
C4621
Q4606
D4612
R4638
D4611
T4601
FH3-0538
ZD4604
Q4603
D4609
R4633
C4617
C4616
R4631
ZD4603
R4624
R4625
C4626
R4635
D4610
Q4605
Q4604
R4630
R4634
C4618
R4632
R4626
R4627
C4615
R4629
R4628
R4649
R4648
P_REMOTE_2/4
G_CONTROL_2/4
AUX_CONTROL_2/4
W4601
J4602
C4625
J4601
C4624
+24VU
H_GND
J4607
FF2-3441
Q4613
R4699
R4698
D4627
R4697
ZD4611
AUX
#110
T4602
FH3-0651
R4609
R4610
D4604
ZD4601
C4604
C4607
R4603
C4603
R4605
R4607
LED4601
D4603
R4604
D4602
R4602
C4606
D4601
R4606
Q4601
R4608
C4605
R4601
D4629
P
T4603
R4620
R4621
D4608
C4611
R4611
ZD4602
C4612
R4614
C4608
R4616
R4619
LED4602
D4607
R4615
R4613
C4610
D4606
R4618
D4605
Q4602
R4617
C4609
R4612
D4628
IC4601
REM2
PWM2
O.P.2
TRANS2
CONT2
REM1
PWM1
O.P.1
TRANS1
H_GND
+24V
P_GND
N_IN2
OP_OUT2
+21.5VR
S_GND
CONT1
N_IN1
OP_OUT1
C4601
C4613
C4614
R4623
R4622
C4602

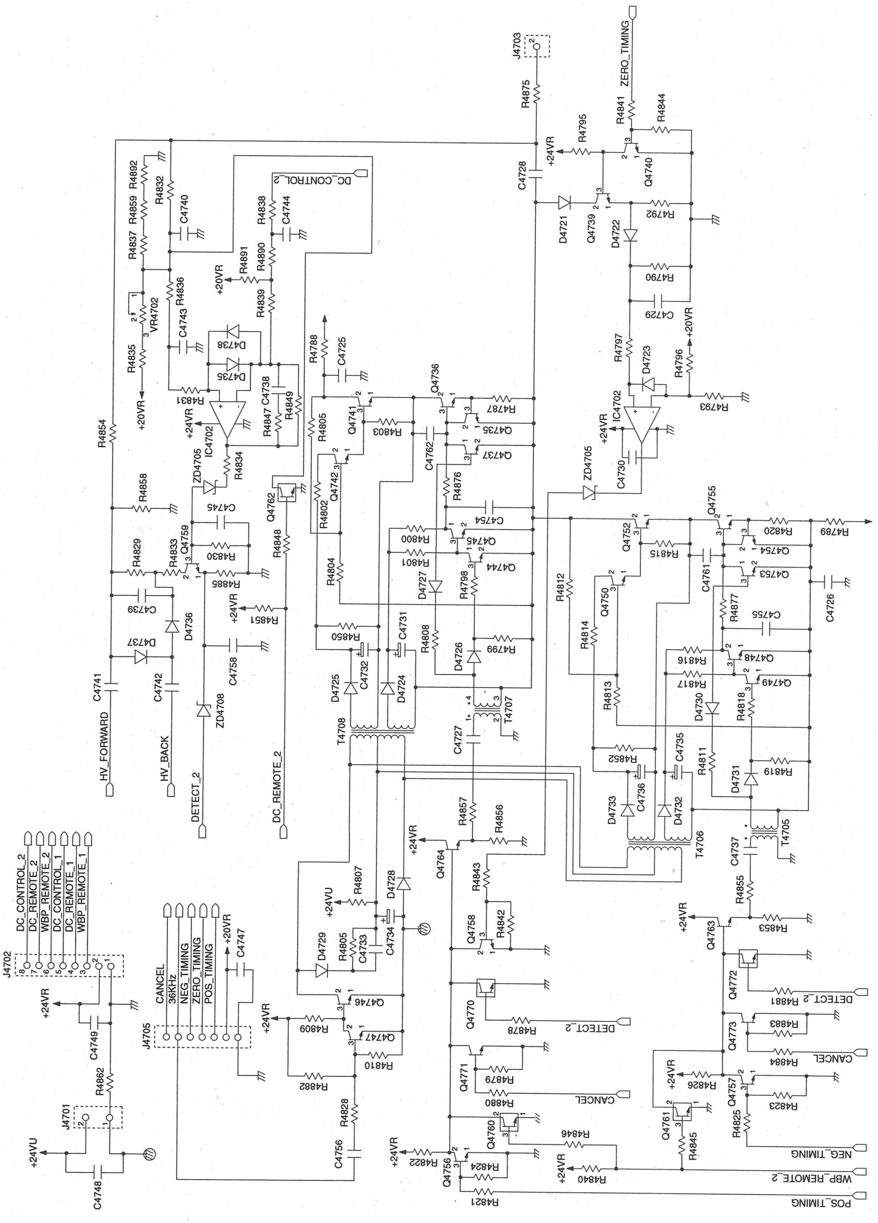
HV2 (2/2)


J4606
J4604
1
2
3
C4648
R4693
R4701
D4626
R4694
R4692
R4691
C4649
IC4604
+24VR
R4690
R4696
ZD4610
R4685
R4684
C4646
C4645
R4687
C4652
R4688
R4695
R4686
D4625
D4624
R4689
Q4612
C4647
Q4609
ZD4609
T4604
FH3-0538
D4622
R4681
C4642
C4643
R4679
ZD4608
R4672
G_CONTROL_2/4
R4673
Q4611
D4623
R4683
Q4610
R4678
C4650
R4674
R4675
R4682
C4641
R4680
C4644
R4677
R4676
P_REMOTE_2/4
AUX_CONTROL_2/4
H_GND
AUX
#110
C4630
T4605
FH3-0651
R4658
R4659
D4617
ZD4606
R4652
C4629
+24VU
R4656
R4654
LED4603
D4616
C4633
R4653
D4615
R4651
D4614
R4655
C4632
D4607
R4657
C4631
R4650
P
C4637
T4606
R4668
R4669
D4621
ZD4607
R4662
C4634
R4667
R4664
LED4604
EM01
D4620
C4638
R4663
R4661
D4619
C4636
D4618
R4666
Q4608
R4665
C4635
R4660
D4631
D4630
IC4603
REM2
PWM2
O.P.2
TRANS2
CONT2
REM1
PWM1
O.P.1
TRANS1
H_GND
+24V
P_GND
N_IN2
OP_OUT2
+21.5VR
S_GND
CONT1
N_IN1
OP_OUT1
C4627
C4639
C4640
R4671
R4670
C4628
+21.5VR

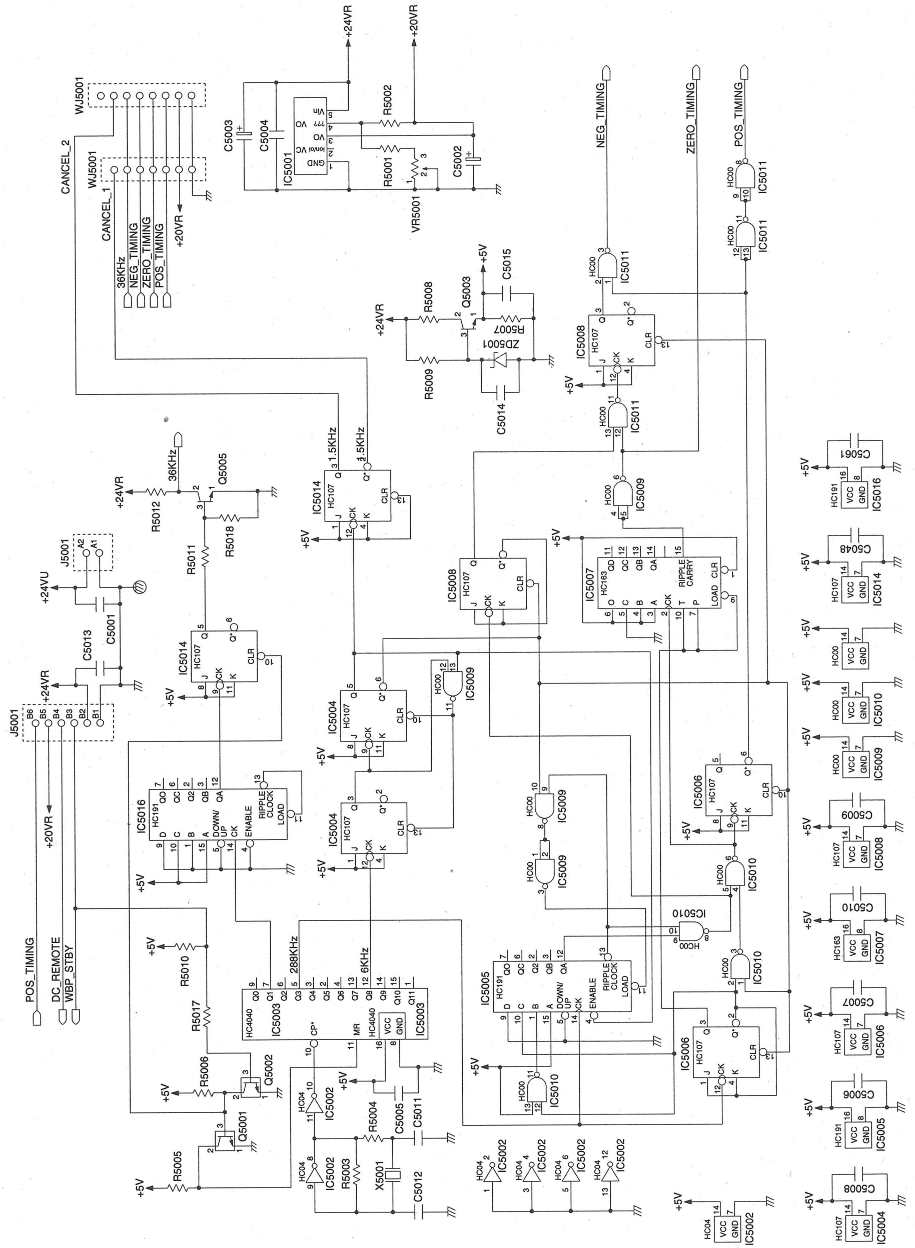
HV3A (1/2)


J4706
J4703
ZERO_TIMING
DC_CONTROL_1
HV_FORWARD
HV_BACK
DETECT_1
DC_REMOTE_1
T4709
T4704
T4703
T4702
T4701
IC4701
+24VR
+20VR
+24VU
36KHz
DETECT_1
CANCEL
DETECT_1
CANCEL
NEG_TIMING
WBP_REMOTE_1
POS_TIMING

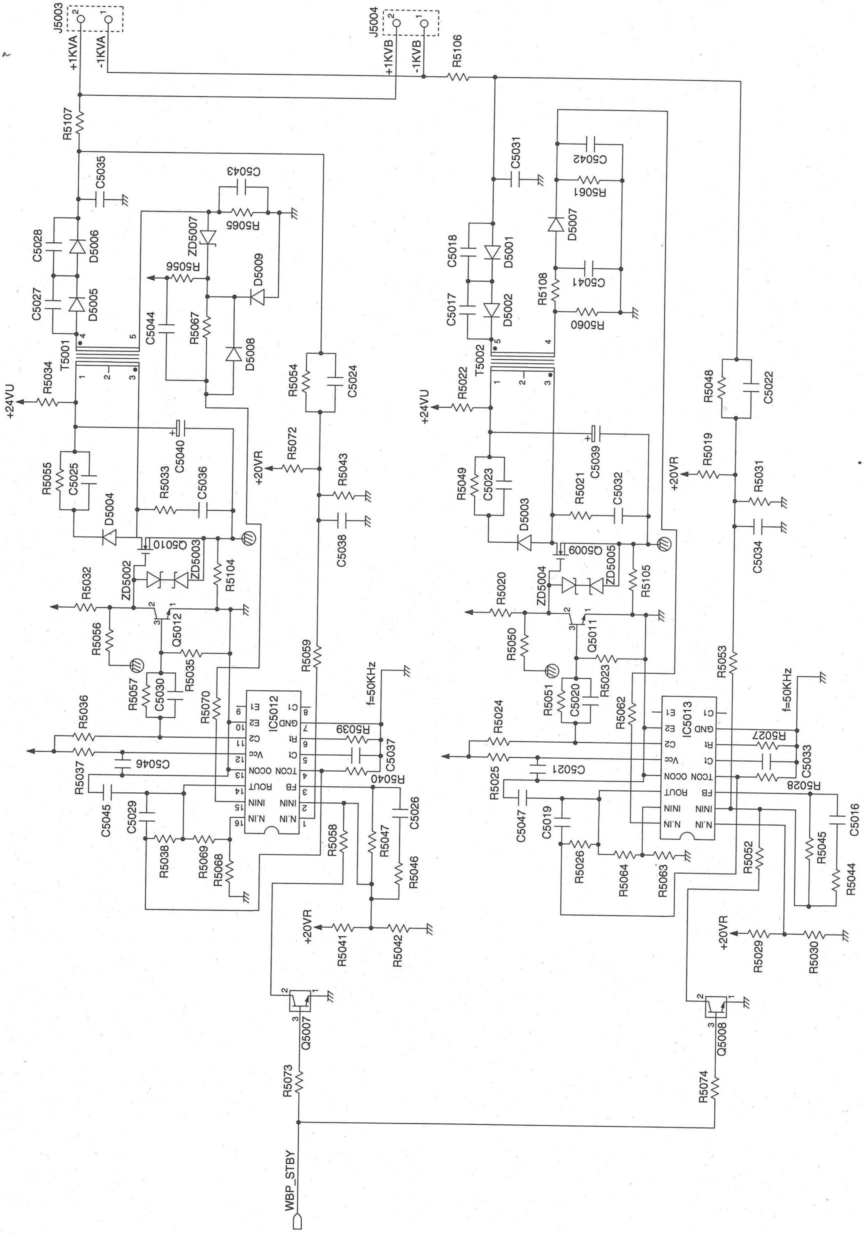
HV3A (2/2)


J4703
ZERO_TIMING
R4875
R4841
R4844
R4795
+24VR
Q4740
C4728
D4721
Q4739
D4722
R4792
R4790
C4729
+20VR
R4797
D4723
R4796
R4793
IC4702
+24VR
C4730
ZD4705
DC_CONTROL_2
R4837
R4859
R4892
R4832
C4740
R4838
C4744
R4891
R4890
R4839
+20VR
R4836
VR4702
C4743
R4835
D4738
D4735
C4738
R4849
R4831
R4847
R4834
IC4702
ZD4705
+24VR
R4854
R4858
C4745
Q4759
R4833
R4829
R4830
R4885
C4739
D4736
D4737
C4741
C4742
HV_FORWARD
HV_BACK
DETECT_2
ZD4708
C4758
R4851
+24VR
R4848
Q4762
DC_REMOTE_2
R4788
C4725
R4805
Q4741
R4803
Q4736
R4787
Q4735
Q4737
C4762
R4876
C4754
Q4742
R4802
R4804
R4800
R4801
Q4745
Q4744
D4727
R4798
R4850
C4731
C4732
D4725
D4724
R4808
D4726
R4799
T4707
T4708
C4727
R4857
R4856
R4812
R4814
Q4750
Q4752
R4815
Q4755
R4820
R4789
Q4754
Q4753
C4761
C4726
R4877
C4755
R4816
Q4748
R4817
Q4749
R4813
D4730
R4818
R4852
C4735
C4736
R4811
D4731
R4819
D4733
D4732
T4706
T4705
C4737
R4855
+24VR
Q4763
R4853
Q4772
DETECT_2
R4881
Q4773
R4883
R4884
CANCEL
+24VR
R4826
Q4757
R4823
R4825
Q4761
R4845
NEG_TIMING
WBP_REMOTE_2
POS_TIMING
R4840
+24VR
+24VR
Q4764
R4843
Q4758
R4842
Q4770
R4878
DETECT_2
Q4771
R4879
R4880
CANCEL
Q4760
R4846
R4824
Q4756
R4822
+24VR
R4821
R4807
+24VU
D4728
D4729
R4805
C4733
C4734
Q4746
R4809
+24VR
Q4747
R4810
R4882
R4828
C4756
J4702
DC_CONTROL_2
DC_REMOTE_2
WBP_REMOTE_2
DC_CONTROL_1
DC_REMOTE_1
WBP_REMOTE_1
+24VR
C4749
R4862
J4701
+24VU
C4748
J4705
CANCEL
36KHz
NEG_TIMING
ZERO_TIMING
POS_TIMING
+20VR
C4747

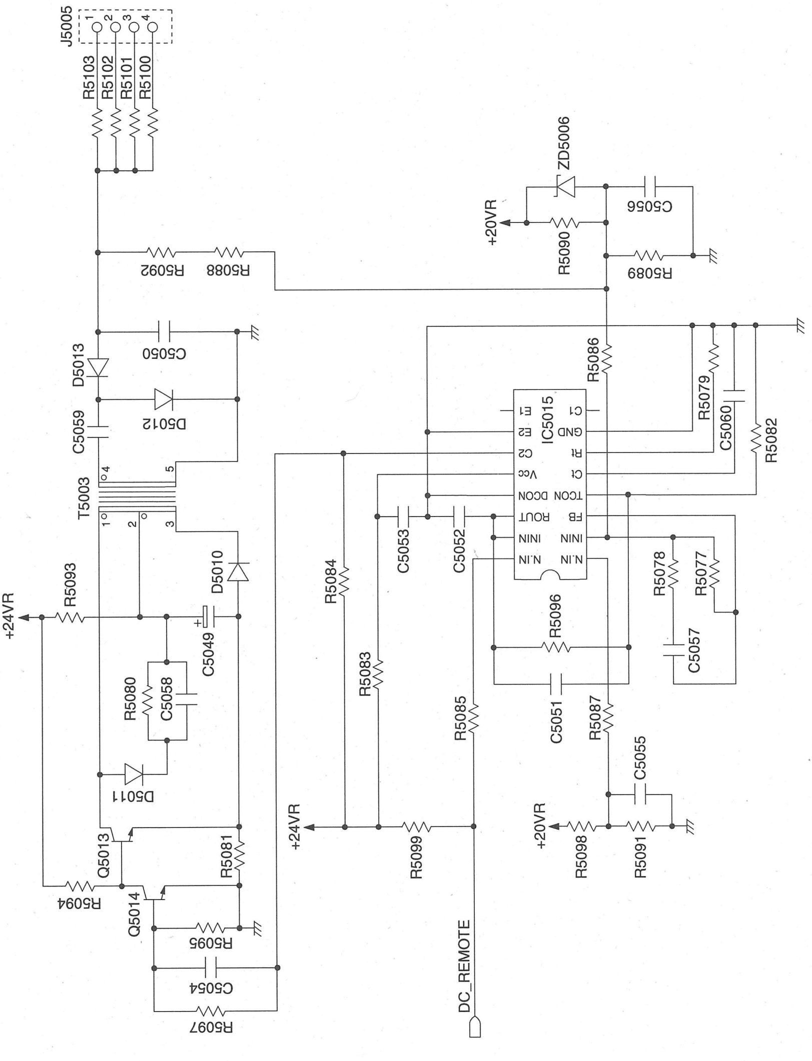
HV3B (1/3)


WJ5001
CANCEL_2
CANCEL_1
36KHz
NEG_TIMING
ZERO_TIMING
POS_TIMING
+20VR
+24VR
C5003
C5004
IC5001
GND
VC
VO
Vin
R5002
R5001
VR5001
C5002
+5V
C5015
R5008
Q5003
R5007
ZD5001
R5009
C5014
IC5011
HC00
IC5008
HC107
CLR
IC5009
IC5007
HC163
RIPPLE CARRY
LOAD
C5061
IC5016
HC191
VCC
GND
C5048
IC5014
IC5010
IC5006
C5009
IC5008
C5010
IC5007
C5007
IC5006
C5006
IC5005
C5008
IC5004
1.5KHz
Q5005
R5012
R5018
R5011
J5001
+24VU
C5013
C5001
IC5014
IC5004
IC5016
RIPPLE CLOCK
DOWN/UP
ENABLE
+20VR
DC_REMOTE
WBP_STBY
R5010
R5017
IC5003
HC4040
288KHz
6KHz
CP*
MR
R5006
Q5002
Q5001
R5005
IC5002
HC04
R5004
C5005
C5011
R5003
X5001
C5012
IC5005
IC5010
IC5006

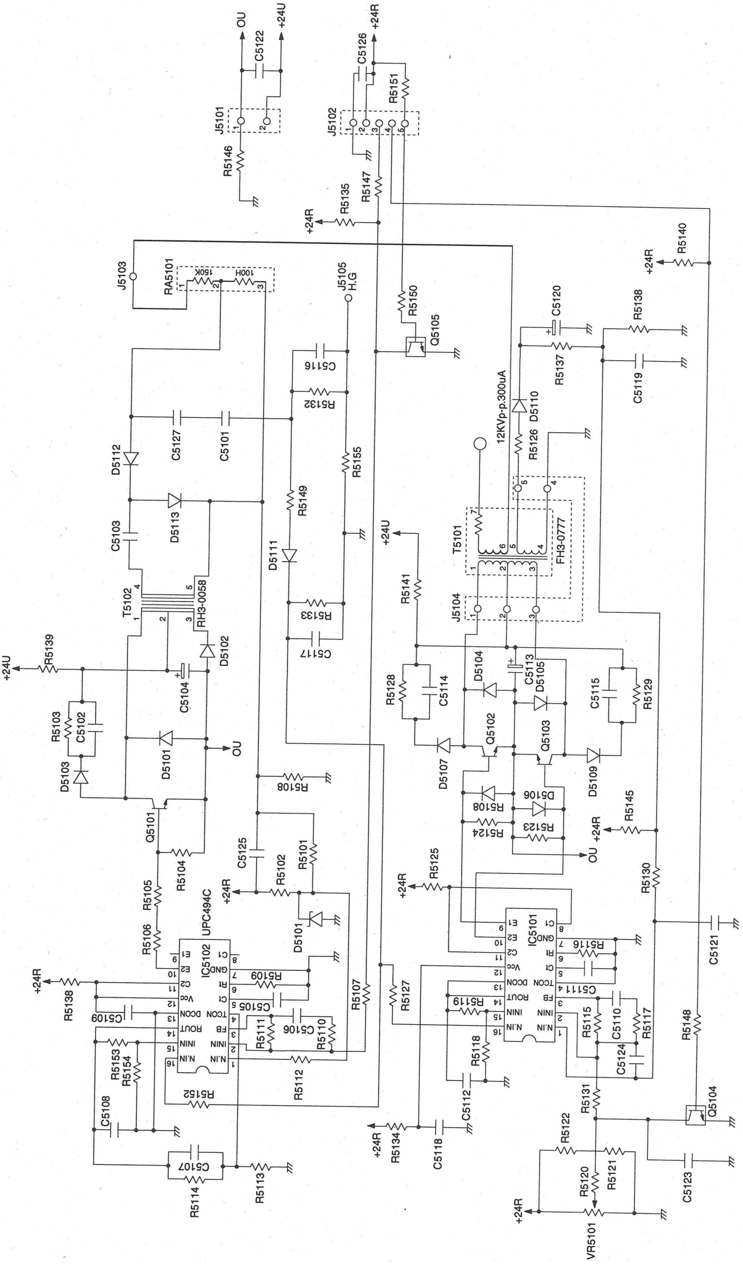
HV3B (2/3)


J5003
+1KVA
-1KVA
J5004
+1KVB
-1KVB
R5106
R5107
C5035
C5028
C5027
D5006
D5005
T5001
R5034
+24VU
C5043
R5065
ZD5007
R5056
D5009
C5044
R5067
D5008
R5054
C5024
C5040
R5055
C5025
R5033
C5036
D5004
R5072
+20VR
R5043
C5038
Q5010
ZD5003
ZD5002
R5104
R5032
Q5012
R5056
R5035
R5057
C5030
R5059
R5070
R5036
IC5012
f=50KHz
R5039
C5046
C5037
R5040
R5037
C5045
C5029
C5026
R5038
R5069
R5068
R5058
R5047
R5046
R5041
R5042
Q5007
R5073
WBP_STBY
C5031
C5042
R5061
D5007
C5018
C5017
D5001
D5002
R5108
C5041
R5060
T5002
R5022
R5048
C5022
C5039
R5049
C5023
R5021
C5032
R5019
R5031
D5003
C5034
Q5009
ZD5005
ZD5004
R5105
R5020
Q5011
R5050
R5051
C5020
R5023
R5053
R5024
R5062
IC5013
R5027
C5033
R5025
C5021
R5028
C5047
C5019
C5016
R5045
R5026
R5064
R5063
R5052
R5044
R5029
R5030
Q5008
R5074
E1
E2
C2
Vcc
OCON
ROUT
ININ
N.IN
C1
GND
Rt
Ct
TCON
FB
NINI
N.IN

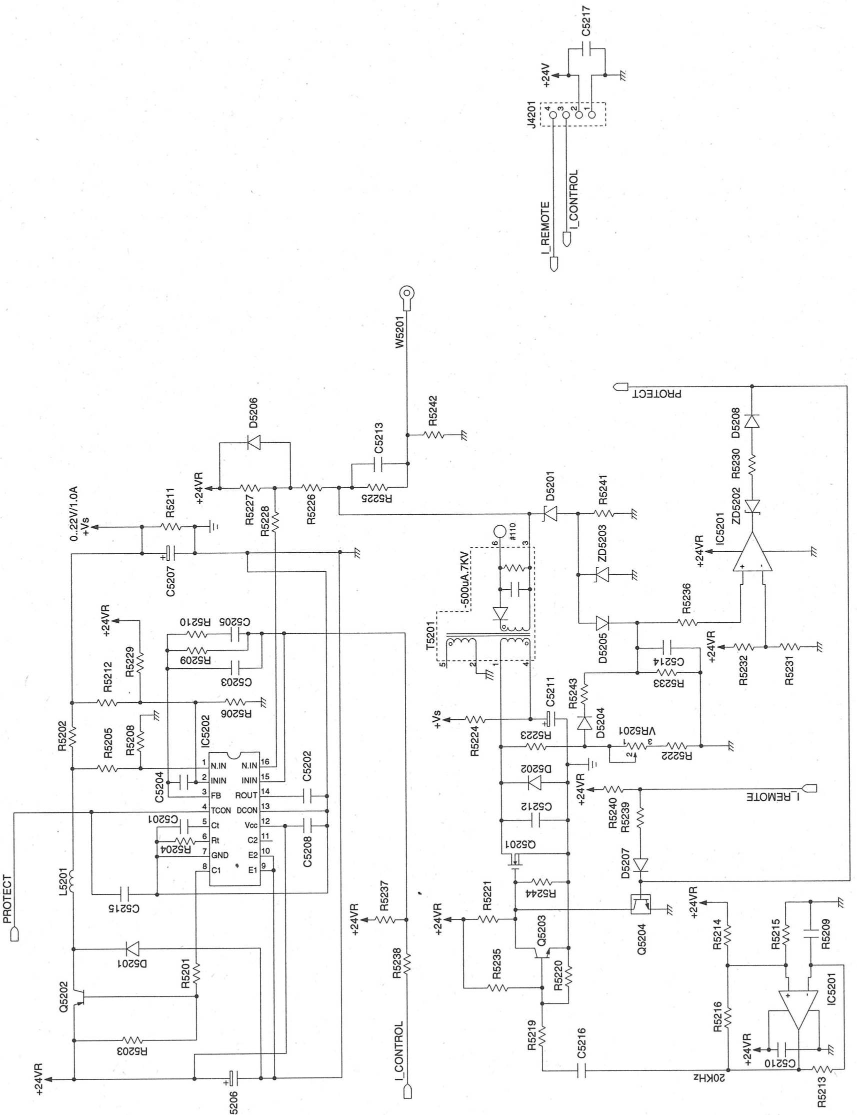
HV3B (3/3)


J5005
1
2
3
4
R5103
R5102
R5101
R5100
ZD5006
+20VR
C5056
R5090
R5089
R5092
R5088
D5013
C5050
C5059
D5012
T5003
R5086
IC5015
E1
C1
E2
GND
C2
Rt
Vcc
Ct
DCON
TCON
ROUT
FB
ININ
ININ
N.IN
N.IN
R5079
C5060
R5082
R5093
+24VR
D5010
C5049
R5080
C5058
D5011
Q5013
R5081
R5094
Q5014
R5095
C5054
R5097
R5084
R5083
C5053
C5052
R5085
+24VR
R5099
DC_REMOTE
R5096
C5051
R5087
R5078
R5077
C5057
C5055
+20VR
R5098
R5091

HV4 (1/1)

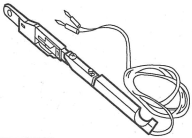
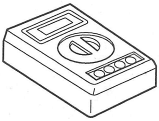
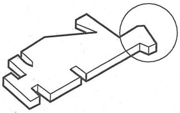
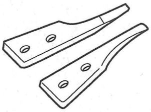
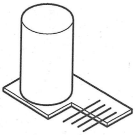

OU
+24U
C5122
J5101
R5146
+24R
C5126
R5151
J5102
R5135
R5147
J5103
RA5101
150K
100H
J5105
H.G
R5150
Q5105
C5120
R5140
R5138
C5116
R5132
R5137
C5119
12KVp-p.300uA
D5110
R5126
C5127
C5101
D5112
R5155
R5149
D5113
C5103
T5101
FH3-0777
T5102
RH3-0058
R5141
D5111
J5104
R5133
C5117
R5139
C5104
D5102
R5128
C5114
D5104
C5113
D5105
C5115
R5129
R5103
C5102
D5101
Q5102
Q5103
D5103
D5107
D5109
R5108
D5106
R5145
Q5101
R5124
R5123
R5104
C5125
R5101
R5102
R5125
R5130
R5105
UPC494C
IC5102
IC5101
R5106
R5109
C5105
C5106
R5111
R5110
R5107
R5127
R5116
C5111
R5119
C5121
C5109
R5153
R5154
R5112
R5115
C5110
R5117
R5118
R5148
C5108
R5152
C5112
C5124
R5131
Q5104
C5107
R5113
R5114
R5134
C5118
R5122
R5120
R5121
C5123
VR5101

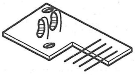
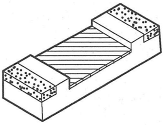
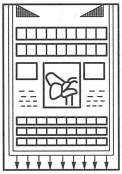
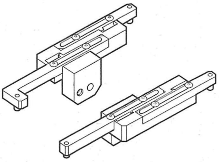
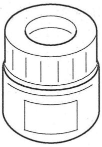
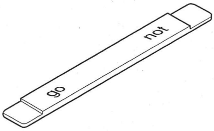
HV5 (1/1)


C5217
+24V
J4201
4
3
2
1
I_REMOTE
I_CONTROL
W5201
D5206
C5213
R5242
0..22V/1.0A
+Vs
R5211
+24VR
R5227
R5228
R5226
R5225
C5207
D5201
R5241
ZD5203
PROTECT
D5208
R5230
ZD5202
IC5201
+24VR
R5236
-500uA,7KV
#110
T5201
D5205
C5214
R5233
+24VR
R5232
R5231
+24VR
R5229
R5212
C5205
R5210
R5209
C5203
R5206
R5202
R5205
R5208
IC5202
N.IN
ININ
FB
TCON
Ct
Rt
GND
C1
N.IN
ININ
ROUT
DCON
Vcc
C2
E2
E1
C5204
C5201
R5204
C5202
C5208
L5201
C5215
PROTECT
D5201
R5201
Q5202
R5203
+24VR
C5206
+24VR
R5237
R5238
I_CONTROL
+Vs
R5224
C5211
R5243
D5204
R5223
VR5201
R5222
D5202
C5212
+24VR
R5240
R5239
I_REMOTE
Q5201
D5207
R5244
R5221
+24VR
Q5204
Q5203
R5235
R5220
R5219
C5216
20KHz
+24VR
R5214
R5215
C5209
R5216
IC5201
+24VR
C5210
R5213

H. SPECIAL TOOLS

You will need the following special tools in addition to the standard tools set to service the machine.

No.	Tool Name	Tool No.	Shape	Rank*	Remarks
1	Laser power checker	FY9-4013		A	Use it when adjusting the intensity of the laser from the laser unit; to be use in combination with a digital multimeter.
2	Digital multimeter	CK-0436		A	Use it when adjusting the intensity of the laser from the laser unit; to be use in combination with the laser power checker to adjust the intensity of the laser from the laser unit.
3	Door switch	TKN-0093	Point to use 	A	Do not remove the transfer assembly frame while the door switch is on.
4	Stop ring pliers end replacement	CK-0426		B	Use it when removing the grip stop ring; 4 to 9 mm.
5	Environment sensor checker	TKN-0456		B	Use it when checking the environment sensor.

No.	Tool Name	Tool No.	Shape	Rank*	Remarks
6	Environment sensor checker	TKN-0457		B	Use it when checking the environment PCB.
7	Potential sensor checker (terminal)	TKN-0197		B	Use it when making a zero-level check on the surface potential sensor.
8	CA1 test sheet	FY9-9030-000		A	Use it when adjusting or checking images.
9	Mirror positioning tool (front, rear)	FY9-3002-000		B	Use it when adjusting the position of No. 1/ No. 2 mirrors; to be used in combination with the mirror positioning tool (rear).
10	Drum cleaner blade lubricant	FY9-6007-000		B	For preventing peeling of the drum cleaning blade.
11	S-B gap tool	FY9-3024-000		B	For adjusting the gap (cylinder blade of developing assembly).

*Rank

A : Must be kept by each service person.
B : Must be kept by each group of about five service persona.
C : Must be kept by each workshop.

I. SOLVENTS AND OILS

You will need the following special tools in addition to the standard tools set to service the machine.

No.	Item	Use	Chemical formula, mixture ratio, etc.	Rank*	Remarks
1	Ethyl alcohol (Ethanol) Isopropyl alcohol (Isopropanol)	Cleaning: copyboard, glass, mirror, etc.	C_2H_5OH $(CH_3)_2CHOH$	Local	Take care in handling. All are flammable. Use in a well-ventilated area. Avoid breathing vapor.
2	MEK	Removing toner or oil stains	$CH_3\text{-}CO\text{-}C_2\text{-}H_5$ Methylethy ketone	Local	Do not use for cleaning the drum, plastic molded parts, or corona wires. Use in a well-ventilated area and avoid breathing vapor. Avoid contact with eyes or with skin.
3	Heat-resistant grease	Lubricating the drive mechanisms; e.g., fixing drive gear, fixing ass'y, etc.		CANON	Tool No.: CK-0427 (500 g/can; equivalent grease may be used if able to withstand 200°C for extended periods of time.)
4	Lubricating oil	Lubrication points	ISO VG 68 oil ESSO Feibs K68 MOBIL Vactra oil No. 2 SHELL Tonna oil T68	Local	Equivalent oil can be used. Tool No.: CK-0451 (100 cc)
5	Lubricant		Mineral oil (paraffin family)	Local	• Uniway 220 (Nihon Sekiyu) • Tool No.: CK-0524 (100 cc) • Alternative Cosmo Dynaway 220 (Cosmo Oil)
6	Flannel cotton cloth	Cleaning		Local	It should be soft enough for cleaning the drum, and it should not produce lint.
7	Lint-free paper	Cleaning	Kimberly-Clark Kim wipes 6020-23 × 40 cm, or 6021-13 × 21 cm	Local	It should be soft enough for cleaning the drum, and it should not produce lint.

Solvents listed are not toxic, but they may produce minor, temporary effects if breathed in a high concentration, or if let to remain on the skin for a period of time. Any effects are temporary, but exercise reasonable caution nevertheless.

Prepared by
OFFICE IMAGING PRODUCTS QUALITY ADVANCEMENT DEPT.5
OFFICE IMAGING PRODUCTS QUALITY ASSURANCE CENTER
CANON INC.
Printed in Japan
Imprimé au Japon

REVISION 0 (SEPT. 1996) [23715]
REVISION 1 (MAY 1997) [23715]
REVISION 2 (MAY 2001) [23715]

5-1, Hakusan 7-chome, Toride-shi Ibaraki 302-8501 Japan

This publication is
printed on 100%
recycled paper.

Canon

PRINTED IN JAPAN (IMPRIME AU JAPON) 0701GR3.75-1 CANON INC.